

RCE

Access DB# 116088

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Laura Weiner Examiner #: 71724 Date: 3-4-04
Art Unit: 1745 Phone Number: 302-1271 Serial Number: 09/903-250
Mail Box and Bldg/Room Location: 66B Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: _____
Inventors (please provide full names): See Front page

Earliest Priority Filing Date: _____

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Could you do a Structural Search on an electrolytic
solution comprising an organic solvent & pyridine
Compound represented by formula (1). Can you search
for the definitions of R'-R5. The specific pyridine
Compound is within claim 9. If possible, please
label I am trying to allow the case so I am
verifying that there is no reference found. If
find one could you label the R's so I know why.
Thanks,
Laura

Please send back copy of claims

STAFF USE ONLY

	Type of Search	Vendors and cost where applicable
Searcher: <u>EDJ</u>	NA Sequence (#) _____	STN <u>\$ 372.14</u>
Searcher Phone #: _____	AA Sequence (#) _____	Dialog _____
Searcher Location: _____	Structure (#) <u>(3)</u>	Questel/Orbit _____
Date Searcher Picked Up: _____	Bibliographic <u>(and)</u>	Dr. Link _____
Date Completed: <u>3-9-04</u>	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: <u>15</u>	Fulltext _____	Sequence Systems _____
Clerical Prep Time: _____	Patent Family _____	WWW/Internet _____
Online Time: <u>100</u>	Other _____	Other (specify) _____

=> file reg

FILE 'REGISTRY' ENTERED AT 15:38:39 ON 09 MAR 2004
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FILE 'LREGISTRY' ENTERED AT 14:12:58 ON 09 MAR 2004

L1 STR
L2 STR

FILE 'REGISTRY' ENTERED AT 14:31:56 ON 09 MAR 2004

L3 3 S L1 AND L2
L4 SCR 1838
E 46.156.30/RID
L5 SCR 1840
L6 14 S L1 AND L2 AND L4 NOT L5
L7 SCR 2016 OR 2021 OR 2026 OR 1929 OR 1918 OR 1874
L8 25 S L1 AND L2 AND L4 NOT (L5 OR L7)
L9 STR L1
L10 STR L2
L11 17 S L9 AND L10 AND L4 NOT (L5 OR L7)
L12 STR L9
L13 STR L10
L14 9 S L12 AND L13 AND L4 NOT (L5 OR L7)

FILE 'LREGISTRY' ENTERED AT 14:51:03 ON 09 MAR 2004

L15 STR L1

FILE 'REGISTRY' ENTERED AT 14:52:25 ON 09 MAR 2004

L16 12 S ((L12 AND L13) OR L15) AND L4 NOT (L5 OR L7)
L17 STR L15
L18 11 S ((L12 AND L13) OR L17) AND L4 NOT (L5 OR L7)
L19 1381 S ((L12 AND L13) OR L17) AND L4 NOT (L5 OR L7) FUL
SAV L19 WEI750/A

FILE 'HCA' ENTERED AT 14:59:08 ON 09 MAR 2004

L20 7747 S L19
L21 424190 S ELECTROLY?
L22 192046 S BATTERY OR BATTERIES OR (ELECTROCHEM? OR ELECTROLY? OR
L23 176 S L20 AND (L21 OR L22)
L24 QUE LITHIUM# OR LITHIAT? OR LI
L25 41119 S NONAQUEOUS? OR NONAQ# OR NONWATER? OR NONH2O OR NON(A) (
L26 63 S L23 AND L24
L27 8 S L23 AND L25

L28 5 S L26 AND L27

FILE 'REGISTRY' ENTERED AT 15:08:37 ON 09 MAR 2004
L29 1344 S L19 NOT PMS/CI

FILE 'HCA' ENTERED AT 15:08:51 ON 09 MAR 2004
L30 7613 S L29
L31 172 S L30 AND (L21 OR L22)
L32 63 S L31 AND L24
L33 8 S L31 AND L25
L34 5 S L32 AND L33

FILE 'HCAPLUS' ENTERED AT 15:11:44 ON 09 MAR 2004
L35 2488 S ITAGAKI ?/AU
L36 1107 S KIYOHARA ?/AU
L37 0 S L35 AND L36
L38 2596 S HIROAKI ?/AU OR ITAGAKI ?/AU
L39 1133 S CHIKARA ?/AU OR KIYOHARA ?/AU
L40 1 S L38 AND L39
SEL L40 1 RN

FILE 'REGISTRY' ENTERED AT 15:12:58 ON 09 MAR 2004
L41 83 S E1-E83
L42 26 S L41 AND L19

FILE 'HCA' ENTERED AT 15:13:19 ON 09 MAR 2004
L43 2217 S L42
L44 62 S L43 AND (L21 OR L22)
L45 26 S L44 AND L24
L46 4 S L44 AND L25
L47 17 S L43 AND L21 AND L22
L48 8 S L33 OR L34 OR L46
L49 14 S L47 NOT L48
L50 13 S L45 NOT (L48 OR L49)
L51 8 S L48 AND (1907-2001/PY OR 1907-2001/PRY)
L52 5 S L49 AND (1907-2001/PY OR 1907-2001/PRY)
L53 7 S L50 AND (1907-2001/PY OR 1907-2001/PRY)
SEL L51 1-8 HIT RN
SEL L52 1-5 HIT RN
SEL L53 1-7 HIT RN

FILE 'REGISTRY' ENTERED AT 15:20:56 ON 09 MAR 2004
L54 30 S E84-E118
L55 1314 S L29 NOT L54

FILE 'HCA' ENTERED AT 15:21:17 ON 09 MAR 2004
L56 2804 S L55
L57 83 S L56 AND (L21 OR L22)

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L58      63 S L57 AND (1907-2001/PY OR 1907-2001/PRY)
L59      30 S L57 AND L24
L60      0 S L57 AND L25
L61      30 S L59 NOT (L51 OR L52 OR L53)
L62      18 S L61 AND (1907-2001/PY OR 1907-2001/PRY)
L63      64 S L57 NOT (L51 OR L52 OR L53 OR L62)
L64      44 S L63 AND (1907-2001/PY OR 1907-2001/PRY)
          SAV L64 WEI750A/A
L67      5 S L51 AND (1907-2000/PY OR 1907-2000/PRY)
L68      4 S L52 AND (1907-2000/PY OR 1907-2000/PRY)
L69      6 S L53 AND (1907-2000/PY OR 1907-2000/PRY)
L70      13 S L62 AND (1907-2000/PY OR 1907-2000/PRY)
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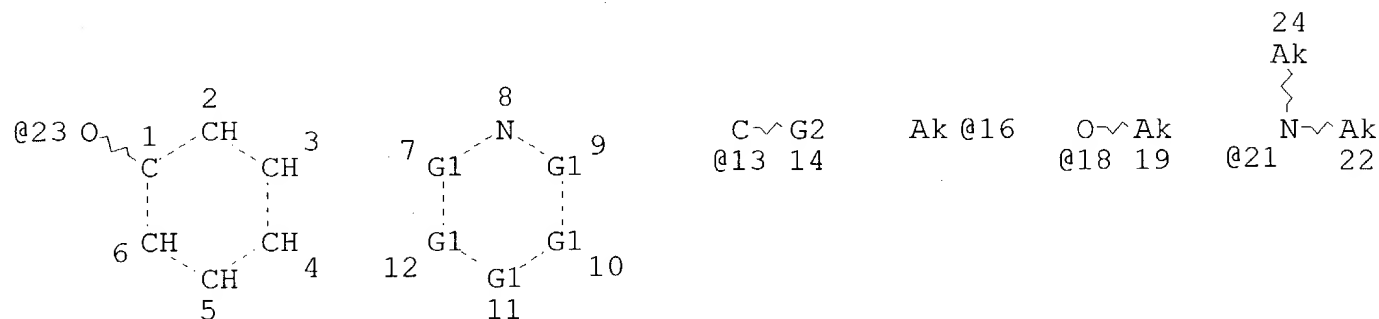
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=> d l19 que stat

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L5      SCR 1840
L7      SCR 2016 OR 2021 OR 2026 OR 1929 OR 1918 OR 1874
L12     STR

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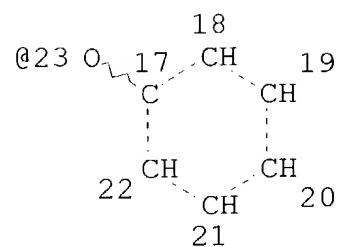
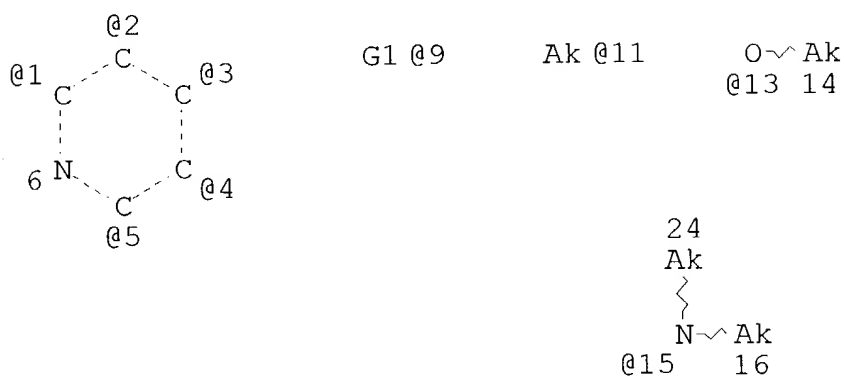
VAR G1=CH/13
VAR G2=16/18/21/23
NODE ATTRIBUTES:
CONNECT IS E2 RC AT 8
CONNECT IS E1 RC AT 16
CONNECT IS E1 RC AT 19
CONNECT IS E1 RC AT 22
CONNECT IS E1 RC AT 24
DEFAULT MLEVEL IS ATOM
GGCAT IS SAT AT 16
GGCAT IS SAT AT 19
GGCAT IS SAT AT 22
GGCAT IS SAT AT 24
DEFAULT ECLEVEL IS LIMITED

```

ECOUNT IS M1-X20 C AT 16
 ECOUNT IS M1-X4 C AT 19
 ECOUNT IS M1-X7 C AT 22
 ECOUNT IS M1-X7 C AT 24

GRAPH ATTRIBUTES:
 RING(S) ARE ISOLATED OR EMBEDDED
 NUMBER OF NODES IS 21

STEREO ATTRIBUTES: NONE
 L13 STR

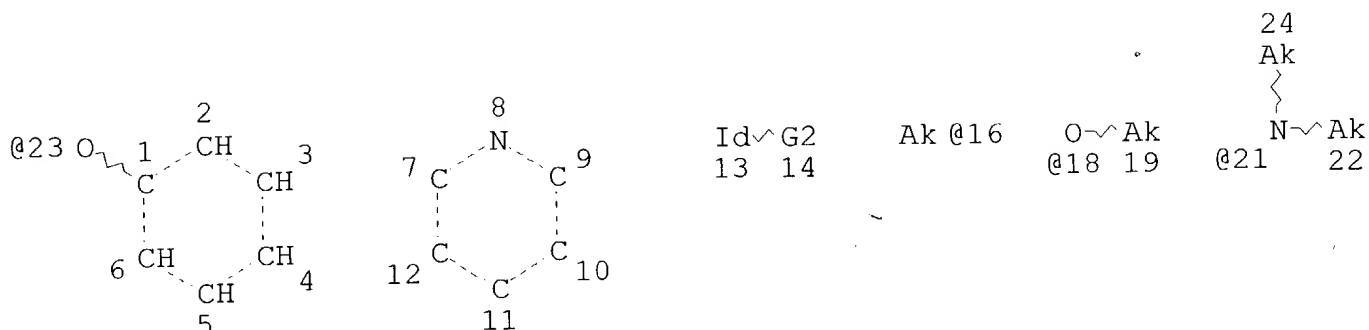


VAR G1=11/13/15/23
 VPA 9-1/2/3/4/5 U
 NODE ATTRIBUTES:
 CONNECT IS E2 RC AT 6
 CONNECT IS E1 RC AT 11
 CONNECT IS E1 RC AT 14
 CONNECT IS E1 RC AT 16
 CONNECT IS E1 RC AT 24
 DEFAULT MLEVEL IS ATOM
 GGCAT IS SAT AT 11
 GGCAT IS SAT AT 14
 GGCAT IS SAT AT 16
 GGCAT IS SAT AT 24
 DEFAULT ECLEVEL IS LIMITED
 ECOUNT IS M4 C AT 11
 ECOUNT IS M1-X4 C AT 14
 ECOUNT IS M1-X7 C AT 16
 ECOUNT IS M1-X7 C AT 24

GRAPH ATTRIBUTES:
 RING(S) ARE ISOLATED OR EMBEDDED
 NUMBER OF NODES IS 20

STEREO ATTRIBUTES: NONE

L17 STR



VAR G2=16/18/21/23

NODE ATTRIBUTES:

CONNECT IS E2 RC AT 8
 CONNECT IS E1 RC AT 16
 CONNECT IS E1 RC AT 19
 CONNECT IS E1 RC AT 22
 CONNECT IS E1 RC AT 24

DEFAULT MLEVEL IS ATOM

GGCAT IS SAT AT 16
 GGCAT IS SAT AT 19
 GGCAT IS SAT AT 22
 GGCAT IS SAT AT 24

DEFAULT ECLEVEL IS LIMITED

ECOUNT IS M1-X20 C AT 16
 ECOUNT IS M1-X4 C AT 19
 ECOUNT IS M1-X7 C AT 22
 ECOUNT IS M1-X7 C AT 24

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED
 NUMBER OF NODES IS 21

STEREO ATTRIBUTES: NONE

L19 1381 SEA FILE=REGISTRY SSS FUL ((L12 AND L13) OR L17) AND L4
 NOT (L5 OR L7)

100.0% PROCESSED 141014 ITERATIONS
 SEARCH TIME: 00.00.02

1381 ANSWERS

=> file hca

FILE 'HCA' ENTERED AT 15:38:55 ON 09 MAR 2004

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=> d 167 1-5 cbib abs hitstr hitind

L67 ANSWER 1 OF 5 HCA COPYRIGHT 2004 ACS on STN

136:88439 **Nonaqueous electrolytic** solution for secondary **battery**. Hiroaki, Itagaki; Chikara, Kiyohara (Mitsubishi Chemical Corporation, Japan). Eur. Pat. Appl. EP 1172878 A2 20020116, 16 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 2001-116675 20010716. PRIORITY: JP 2000-213624 20000714.

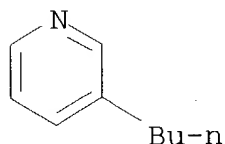
AB A **nonaq. electrolytic** soln. (contg. at least an org. solvent and a **lithium** salt further contg. a particular pyridine compd.) is capable of depressing deterioration of **battery** properties in a high temp. environment. A secondary **battery** is also provided.

IT 539-32-2, 3-Butylpyridine 585-48-8,
2,6-Ditert-Butylpyridine 702-16-9, 2-Methyl-5-
butylpyridine 1129-69-7, 2-Hexylpyridine 1628-89-3
, 2-Methoxypyridine 2294-76-0, 2-Pentylpyridine
2961-47-9, 4-(5-Nonyl)pyridine 2961-49-1
3978-81-2, 4-tert-Butylpyridine 4783-68-0,
2-Phenoxypyridine 4810-79-1, 4-IsoButylpyridine
4810-86-0 5335-75-1, 4-Butylpyridine
5402-34-6 5683-33-0, 2-Dimethylaminopyridine
5944-41-2, 2-tert-Butylpyridine 6831-86-3,
2-tert-Butyl-6-methylpyridine 7295-76-3, 3-Methoxypyridine
7399-50-0, 2-(3-Pentyl)pyridine 20336-15-6,
2,4,6-Tritert-Butylpyridine 35182-51-5,
4-(3-Pentyl)pyridine 38222-83-2, 2,6-Ditert-Butyl-4-
methylpyridine 38222-90-1 40089-91-6,
4-Octylpyridine 80401-50-9, 2-Undecylpyridine
97691-20-8

(nonaq. electrolytic soln. for secondary
battery)

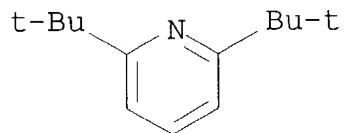
RN 539-32-2 HCA

CN Pyridine, 3-butyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



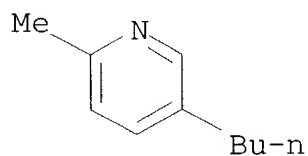
RN 585-48-8 HCA

CN Pyridine, 2,6-bis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



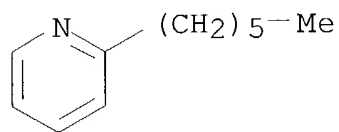
RN 702-16-9 HCA

CN Pyridine, 5-butyl-2-methyl- (9CI) (CA INDEX NAME)



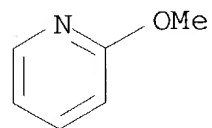
RN 1129-69-7 HCA

CN Pyridine, 2-hexyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



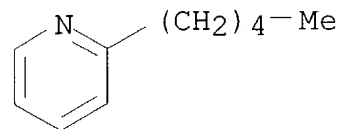
RN 1628-89-3 HCA

CN Pyridine, 2-methoxy- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



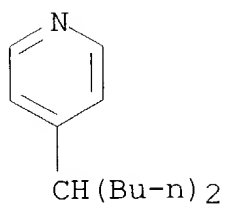
RN 2294-76-0 HCA

CN Pyridine, 2-pentyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

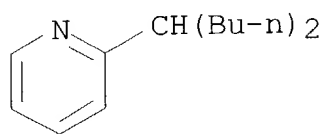


RN 2961-47-9 HCA

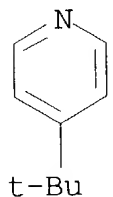
CN Pyridine, 4-(1-butylpentyl)- (6CI, 8CI, 9CI) (CA INDEX NAME)



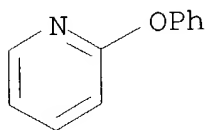
RN 2961-49-1 HCA
CN Pyridine, 2-(1-butylpentyl)- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



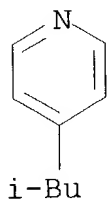
RN 3978-81-2 HCA
CN Pyridine, 4-(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



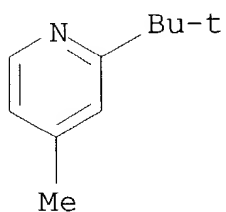
RN 4783-68-0 HCA
CN Pyridine, 2-phenoxy- (7CI, 8CI, 9CI) (CA INDEX NAME)



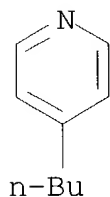
RN 4810-79-1 HCA
CN Pyridine, 4-(2-methylpropyl)- (9CI) (CA INDEX NAME)



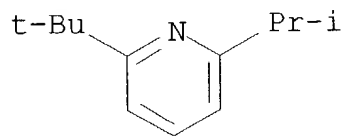
RN 4810-86-0 HCA
CN Pyridine, 2-(1,1-dimethylethyl)-4-methyl- (9CI) (CA INDEX NAME)



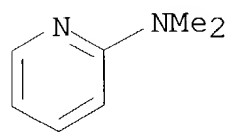
RN 5335-75-1 HCA
CN Pyridine, 4-butyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



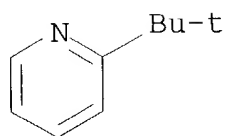
RN 5402-34-6 HCA
CN Pyridine, 2-(1,1-dimethylethyl)-6-(1-methylethyl)- (9CI) (CA INDEX NAME)



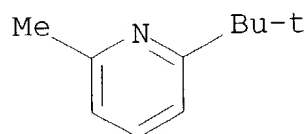
RN 5683-33-0 HCA
CN 2-Pyridinamine, N,N-dimethyl- (9CI) (CA INDEX NAME)



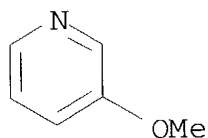
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CN Pyridine, 2-(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



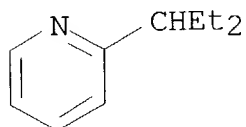
RN 6831-86-3 HCA
CN Pyridine, 2-(1,1-dimethylethyl)-6-methyl- (9CI) (CA INDEX NAME)



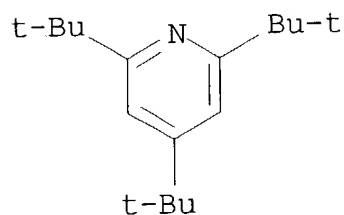
RN 7295-76-3 HCA
CN Pyridine, 3-methoxy- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



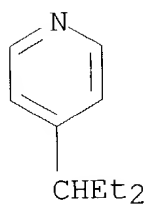
RN 7399-50-0 HCA
CN Pyridine, 2-(1-ethylpropyl)- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



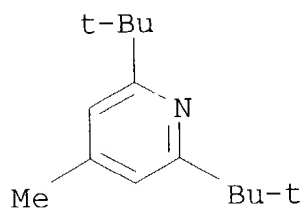
RN 20336-15-6 HCA
CN Pyridine, 2,4,6-tris(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



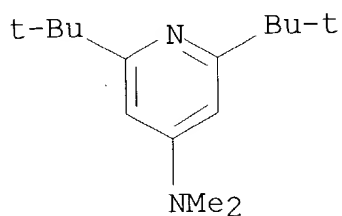
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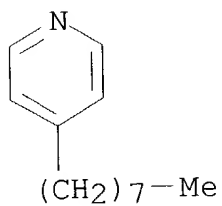
RN 38222-83-2 HCA
 CN Pyridine, 2,6-bis(1,1-dimethylethyl)-4-methyl- (9CI) (CA INDEX NAME)



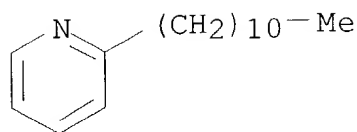
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 CN 4-Pyridinamine, 2,6-bis(1,1-dimethylethyl)-N,N-dimethyl- (9CI) (CA INDEX NAME)



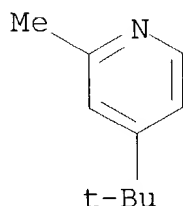
RN 40089-91-6 HCA
 CN Pyridine, 4-octyl- (9CI) (CA INDEX NAME)



RN 80401-50-9 HCA
 CN Pyridine, 2-undecyl- (6CI, 9CI) (CA INDEX NAME)



RN 97691-20-8 HCA
 CN Pyridine, 4-(1,1-dimethylethyl)-2-methyl- (9CI) (CA INDEX NAME)



IC ICM H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST **battery** secondary **nonaq electrolyte**
 pyridine compd additive
 IT Transition metal oxides
 (lithiated; **nonaq. electrolytic**
 soln. for secondary **battery**)
 IT Secondary **batteries**
 (lithium; **nonaq. electrolytic** soln.
 for secondary **battery**)
 IT **Battery electrolytes**
 (nonaq. **electrolytic** soln. for secondary
battery)
 IT Carbonaceous materials (technological products)
 (nonaq. **electrolytic** soln. for secondary
battery)
 IT Carbon black, uses
 (nonaq. **electrolytic** soln. for secondary
battery)
 IT Fluoropolymers, uses
 (nonaq. **electrolytic** soln. for secondary
battery)
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
 21324-40-3, **Lithium** hexafluorophosphate 39457-42-6,
Lithium manganese oxide 52627-24-4, Cobalt **lithium**
 oxide 53027-29-5, Iron **Lithium** manganese oxide
 61179-01-9, Aluminum **Lithium** manganese oxide
 133782-19-1, **Lithium** manganese vanadium oxide
 145896-59-9, Aluminum **lithium** manganese oxide
 Al0.1LiMn1.9O4 153327-00-5, Gallium **Lithium** manganese

oxide 162684-16-4, **Lithium** manganese nickel oxide
187156-09-8, **Lithium** manganese zinc oxide 191538-04-2,
Copper **Lithium** manganese oxide 204450-96-4, Chromium
Lithium manganese oxide 208394-04-1, **Lithium**
manganese titanium oxide 214536-41-1, Cobalt **Lithium**
manganese oxide

(nonaq. electrolytic soln. for secondary
battery)

IT 91-02-1, 2-Benzoylpyridine 100-70-9, 2-Cyanopyridine 114-91-0
372-48-5, 2-Fluoropyridine 487-19-4, 3-(1-Methylpyrrol-2-
yl)pyridine **539-32-2**, 3-Butylpyridine 580-35-8,
2,4,6-Triphenylpyridine **585-48-8**, 2,6-Ditert-Butylpyridine
622-39-9, 2-Propylpyridine 644-98-4, 2-IsoPropylpyridine
696-30-0, 4-IsoPropylpyridine 700-16-3, Pentafluoropyridine
702-16-9, 2-Methyl-5-butylpyridine 1122-62-9,
2-Acetylpyridine 1122-81-2, 4-Propylpyridine **1129-69-7**,
2-Hexylpyridine **1628-89-3**, 2-Methoxypyridine 1658-42-0,
Methyl 2-Pyridylacetate 2057-49-0, 4-(3-Phenylpropyl)pyridine
2294-76-0, 2-Pentylpyridine 2456-81-7,
4-(1-Pyrrolidinyl)pyridine 2524-52-9, 2-Pyridine carboxylic acid,
ethyl ester 2530-26-9, 3-Nitropyridine 2739-97-1,
2-(Cyanomethyl)pyridine 2767-90-0, 4-Piperidinopyridine
2961-47-9, 4-(5-Nonyl)pyridine **2961-49-1**
3796-23-4, 3-Trifluoromethylpyridine **3978-81-2**,
4-tert-Butylpyridine 3980-49-2 4673-31-8, 3-Propylpyridine
4783-68-0, 2-Phenoxypyridine **4810-79-1**,
4-IsoButylpyridine **4810-86-0** 5051-98-9 **5335-75-1**
, 4-Butylpyridine **5402-34-6** **5683-33-0**,
2-Dimethylaminopyridine **5944-41-2**, 2-tert-Butylpyridine
6831-86-3, 2-tert-Butyl-6-methylpyridine 6972-69-6,
N,N-Dimethylnicotinamide **7295-76-3**, 3-Methoxypyridine
7399-50-0, 2-(3-Pentyl)pyridine 9002-84-0, Ptfе
17452-27-6, 3-Pyridylisothiocyanate **20336-15-6**,
2,4,6-Tritert-Butylpyridine 21298-55-5, 2-(3-Thienyl)pyridine
24937-79-9, Pvdф **35182-51-5**, 4-(3-Pentyl)pyridine
38222-83-2, 2,6-Ditert-Butyl-4-methylpyridine
38222-90-1 40055-37-6 **40089-91-6**,
4-Octylpyridine 50966-74-0 64001-70-3, 4-(1,3,4)Oxadiazol-2-
ylpyridine 67580-61-4, 4-(2-Diethylaminoethyl)pyridine
70380-75-5, 5-(Pyrid-4-yl)oxazole **80401-50-9**,
2-Undecylpyridine 80866-95-1, 3-(Pyrrol-1-ylmethyl)pyridine
82993-35-9 83978-69-2 87451-35-2 **97691-20-8**
102253-71-4, 4-(4-Pyridyl)-1,2,3-thiadiazole 387367-45-5
387367-57-9 387367-60-4

(nonaq. electrolytic soln. for secondary
battery)

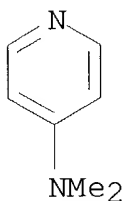
135:114408 Photoelectrochemical **cell** comprising polymer **electrolyte** composition formed by polymerizing ionic liquid crystal monomer. Ono, Michio (Fuji Photo Film Co., Ltd., Japan). Eur. Pat. Appl. EP 1116769 A2 20010718, 43 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 2001-100999 20010117. PRIORITY: JP 2000-8054 20000117.

AB Disclosed is an **electrolyte** compn. comprising a polymer compd. formed by polymg. an ionic liq. crystal monomer contg. at least one polymerizable group. Also disclosed are an **electrochem. cell**, a **nonaq. secondary cell** and a photoelectrochem. cell, each comprising the **electrolyte** compn. In accordance with the present invention, an **electrolyte** which does not substantially volatilize and exhibits excellent charge-transporting properties can be obtained, making it possible to obtain a photoelectrochem. cell having excellent photoelec. conversion properties and less deterioration of properties with time. Further, a **lithium** ion-conducting material having an extremely high ionic cond. at low temps. can be obtained.

IT **1122-58-3**
(in prepn. of ionic liq. crystal monomer contg. polymerizable group)

RN 1122-58-3 HCA

CN 4-Pyridinamine, N,N-dimethyl- (9CI) (CA INDEX NAME)



IC ICM C09K019-00

ICS C09K019-38; H01G009-20

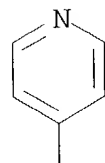
CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 72

ST photoelectrochem **cell** polymer **electrolyte** compn
ionic liq crystal monomer; polyelectrolyte compn ionic liq crystal monomer prepn photoelectrochem cell

IT Liquid crystals
Photoelectrochemical cells
Polyelectrolytes

(photoelectrochem. **cell** comprising polymer **electrolyte** compn. formed by polymg. ionic liq. crystal

- monomer)
- IT 350507-60-7P 350507-61-8P 350507-62-9P 350507-63-0P
350507-64-1P
(**electrolyte** compn. comprising polymer compd. formed by
polymg. of ionic liq. crystal monomer for photoelectrochem. cell
application)
- IT 98-59-9, p-Toluenesulfonyl chloride 104-15-4, reactions
108-59-8, Dimethyl malonate 112-29-8, 1-Bromodecane 629-11-8,
Hexamethylene glycol 814-68-6, 2-Propenoyl chloride 872-85-5,
Pyridine-4-aldehyde **1122-58-3** 2615-15-8, Hexaethylene
glycol 3943-97-3 7681-82-5, Sodium iodide, reactions
10041-02-8 14104-20-2, Silver tetrafluoroborate 53463-68-6,
10-Bromodecanol 90076-65-6
(in prepn. of ionic liq. crystal monomer contg. polymerizable
group)
- L67 ANSWER 3 OF 5 HCA COPYRIGHT 2004 ACS on STN
- 128:296930 Photochemical solar cells based on dye-sensitization of
nanocrystalline TiO₂. Deb, S. K.; Ferrere, S.; Frank, A. J.; Gregg,
B. A.; Huang, S. Y.; Nozik, A. J.; Schlichthorl, G.; Zaban, A.
(National Renewable Energy Laboratory (NREL), Golden, CO, 80401,
USA). Conference Record of the IEEE Photovoltaic Specialists
Conference, 26th, 507-510 (English) **1997**. CODEN: CRCNDP.
ISSN: 0160-8371. Publisher: Institute of Electrical and Electronics
Engineers.
- AB A new type of photovoltaic cell is described. It is a
photoelectrochem. device that is based on the dye-sensitization of
thin (10-20 μ m) nanocryst. films of TiO₂ nanoparticles in contact
with a nonaq. liq. electrolyte. The cell is
very simple to fabricate and, in principle, its color can be tuned
through the visible spectrum, ranging from being completely
transparent to black opaque by changing the absorption
characteristics of the dye. The highest present efficiency of the
dye-sensitized photochem. solar cell is about 11%. The cell has the
potential to be a low-cost photovoltaic option. Unique applications
include photovoltaic power windows and photoelectrochromic windows.
- IT **3978-81-2**, 4-tert-Butylpyridine
(pretreatment with; photochem. solar cells based on
dye-sensitization of nanocryst. TiO₂)
- RN 3978-81-2 HCA
- CN Pyridine, 4-(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



t-Bu

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 IT 100-69-6, 2-Vinylpyridine **3978-81-2**, 4-tert-Butylpyridine
 7664-41-7, Ammonia, uses 25014-15-7, Poly(2-vinylpyridine)
 (pretreatment with; photochem. solar cells based on
 dye-sensitization of nanocryst. TiO₂)

L67 ANSWER 4 OF 5 HCA COPYRIGHT 2004 ACS on STN

114:232080 **Nonaqueous batteries** with

electrolytes containing nitrogen-containing compounds.

Furukawa, Saneshiro; Yoshimura, Seiji; Takahashi, Masatoshi (Sanyo Electric Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 03046771 A2

19910228 Heisei, 5 pp. (Japanese). CODEN: JKXXAF.

APPLICATION: JP 1989-183383 19890714.

AB The (Li) **batteries** use F-contg. Li

salt **electrolytes** contg. N-contg. unsatd. ring compds.

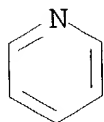
The N-contg. compds are selected from pyridine, pyrroline, and diethyl pyridine. Addn. of these N-contg. compds. suppresses corrosion of metal **battery** cases and improves discharge performance of the **batteries** at low temps. after storage.

IT **27175-64-0**, Dimethylpyridine

(corrosion inhibitor, **electrolyte** contg., for
lithium batteries)

RN 27175-64-0 HCA

CN Pyridine, dimethyl- (9CI) (CA INDEX NAME)



no alkyl group

2 (D1-Me)

IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **battery** anticorrosion nitrogen org compd; **lithium**
battery electrolyte additive anticorrosion

- IT **Batteries, primary**
(**lithium, electrolyte** contg. pyridine and pyrroline in, for corrosion prevention)
- IT 110-86-1, Pyridine, uses and miscellaneous **27175-64-0**,
Dimethylpyridine 28350-87-0, Pyrroline
(corrosion inhibitor, **electrolyte** contg., for **lithium batteries**)

L67 ANSWER 5 OF 5 HCA COPYRIGHT 2004 ACS on STN

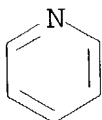
102:178473 Coulometric generation of hydrogen ions by anodic oxidation of dihydric and trihydric phenols in acetonitrile and acetic acid-acetic anhydride. Vajgand, Vilim J.; Mihajlovic, Randjel P.; Manetovic, Mirjana S. (Fac. Sci., Univ. Belgrade, Belgrade, Yugoslavia). Glasnik Hemijskog Drustva Beograd, 49(10), 621-6 (English) **1984**. CODEN: GHDBAX. ISSN: 0017-0941.

- AB Coulometric generation of H ions by the oxidn. of some dihydric and trihydric phenols in MeCN and acetic acid-acetic anhydride (1:6) was examd. Current-voltage curves for the supporting **electrolyte**, indicator, titrated bases, and depolarizers show that the depolarizers studied are oxidized at potentials much more neg. than those of titrated bases and other substances present in the soln. H ions generated by the oxidn. of these depolarizers were used for titrn. of K H phthalate and NaOAc in acetic acid-acetic anhydride (1:6) as well as for the detn. of butylamine, 2,4,6-collidine, and triethylamine in MeCN with visual and photometric end-point detection. The oxidn. of hydroxyhydroquinone, pyrocatechol, pyrogallol, 2,3,4-trihydroxybenzoic acid, and gallic acid, resp., was found to proceed with 100% current efficiency.

- IT **29611-84-5**
(detn. of, by **nonaq.** titrn. with coulometrically generated hydrogen ions)

RN 29611-84-5 HCA

CN Pyridine, trimethyl- (8CI, 9CI) (CA INDEX NAME)



3 (D1-Me)

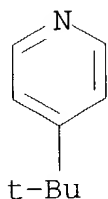
CC 80-6 (Organic Analytical Chemistry)

- IT Oxidation, electrochemical
(anodic, of polyhydric phenols in **nonaq.** media, org.
base detn. by coulometrically generated hydrogen ions from)

- IT Bases, analysis
(org., detn. of, by **nonaq.** titrn. with coulometrically generated hydrogen ions)
- IT Phenols, reactions
(polyhydric, anodic oxidn. of, in **nonaq.** solns., org. base detn. by coulometrically generated hydrogen ions from)
- IT 87-66-1 120-80-9, reactions 149-91-7, reactions 533-73-3 610-02-6
(anodic oxidn. of, in **nonaq.** solns., org. base detn. by coulometrically generated hydrogen ions from)
- IT 12408-02-5, uses and miscellaneous
(coulometrically generated, from anodic oxidn. of polyhydric phenols in **nonaq.** media, org. base detn. by)
- IT 109-73-9, analysis 121-44-8, analysis 127-09-3 877-24-7
29611-84-5
(detn. of, by **nonaq.** titrn. with coulometrically generated hydrogen ions)

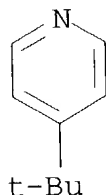
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- L68 ANSWER 1 OF 4 HCA COPYRIGHT 2004 ACS on STN
136:343317 Power generating method and photoelectrochemical cell.
Sotomura, Tadashi (Matsushita Electric Industrial Co., Ltd., Japan).
PCT Int. Appl. WO 2002033775 A1 20020425, 49 pp. DESIGNATED
STATES: W: CN, JP, KR, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR,
GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (Japanese). CODEN: PIXXD2.
APPLICATION: WO 2001-JP8029 20010914. PRIORITY: JP 2000-316459
20001017; JP 2001-156641 20010525.
- AB Power is generated using a photoelectrochem. **cell**, having
an **electrolyte** between a cathode and an anode, with the
anode and/or the **electrolyte** contg. mols. capable of
electrochem. oxidizing carbohydrates by absorbing light, by
supplying the carbohydrate while illuminating the mols.
- IT **3978-81-2**, 4-tert-Butylpyridine
(photoelectrochem. **cells** with **electrolytes**
and anodes contg. light activating carbohydrate oxidizing mols.
for power generation)
- RN 3978-81-2 HCA
CN Pyridine, 4-(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



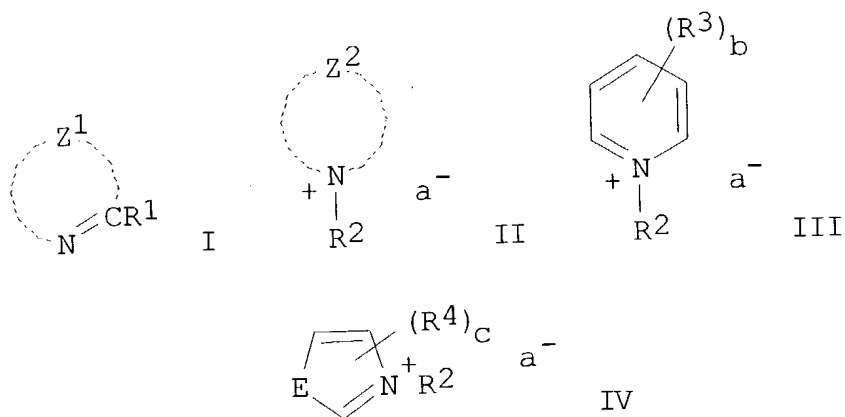
- IC ICM H01M014-00
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Photoelectrochemical cells
(photoelectrochem. **cells** with **electrolytes**
and anodes contg. light activating carbohydrate oxidizing mols.
for power generation)
- IT 50-99-7, Glucose, uses 57-48-7, Fructose, uses 58-68-4, Nadh
123-31-9, Hydroquinone, uses 1310-58-3, Potassium hydroxide, uses
1314-13-2, Zinc oxide, uses 1738-36-9, Methoxyacetone nitrile
3978-81-2, 4-tert-Butylpyridine 7440-06-4, Platinum, uses
7440-22-4, Silver, uses 7440-50-8, Copper, uses 10377-51-2,
Lithium iodide 13463-67-7, Titania, uses 18282-10-5, Tin dioxide
50926-11-9, Ito 65735-91-3 68007-08-9 106295-90-3
141460-19-7 153125-65-6 214000-95-0 288317-24-8
(photoelectrochem. **cells** with **electrolytes**
and anodes contg. light activating carbohydrate oxidizing mols.
for power generation)
- L68 ANSWER 2 OF 4 HCA COPYRIGHT 2004 ACS on STN
135:95081 Electron transport and back reaction in dye sensitized
nanocrystalline photovoltaic cells. Peter, L. M.; Wijayantha, K. G.
U. (Department of Chemistry, University of Bath, Bath, BA2 7AY, UK).
Electrochimica Acta, 45(28), 4543-4551 (English) 2000.
CODEN: ELCAAV. ISSN: 0013-4686. Publisher: Elsevier Science Ltd..
- AB The transport and back reaction of electrons in dye sensitized
nanocryst. solar cells (DSNC) has been studied by frequency resolved
optical perturbation techniques. Intensity modulated photocurrent
spectroscopy (IMPS) has been used to obtain values of the electron
diffusion coeff., D_n , as a function of illumination intensity. It
was found that D_n increased with intensity ($D_n \propto I^{0.5}$).
Intensity-modulated photovoltage spectroscopy (IMVS) has been used
to measure the electron lifetime, τ_n , which is detd. by the rate
of back reaction with I_3^- ions in the **electrolyte**. It was
found that τ_n decreased with light intensity
($\tau_n \propto I^{-0.5}$). The electron diffusion length,
 $L_n = (D_n \tau_n)^{1/2}$, is therefore only weakly dependent on light
intensity. The values of L_n were used to calc. the theor. IPCE of
the cell. Exptl. measurements confirmed the prediction that the
IPCE should remain almost const. over five orders of magnitude of
light intensity. Possible reasons for the opposite trends in D_n and
 τ_n are discussed and related to the fundamental processes taking
place in the DSNC.
- IT **3978-81-2**, 4-tert-Butylpyridine
(electron transport and back reaction in dye sensitized
nanocryst. photovoltaic **cells** with **electrolyte**
contg.)
- RN 3978-81-2 HCA

CN Pyridine, 4-(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72, 73
- IT 75-05-8, Acetonitrile, uses **3978-81-2**,
4-tert-Butylpyridine 7553-56-2, Iodine, uses 10377-51-2, Lithium
Iodide 178631-05-5
(electron transport and back reaction in dye sensitized
nanocryst. photovoltaic **cells** with **electrolyte**
contg.)
- IT 14900-04-0P, Iodide (I31-)
(formation in dye sensitized nanocryst. photovoltaic
cells with **electrolyte** contg. iodine)
- L68 ANSWER 3 OF 4 HCA COPYRIGHT 2004 ACS on STN
132:224864 Photoelectrochemical cells. Takisawa, Hiroo (Fuji Photo Film
Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2000090991 A2
20000331, 43 pp. (Japanese). CODEN: JKXXAF. APPLICATION:
JP 1998-272611 19980909.

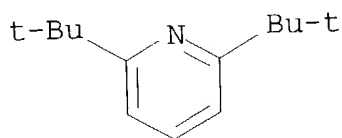
GI



AB The cells, having a charge transferring layer between a and a

counter electrode, contain I (R1 = alkyl, cycloalkyl, aralkyl, arom., heterocyclic, alkoxy, arom. oxy or acylamino groups, Z1 = 5- or 6-membered arom. C and N ring) having mol. wt. ≤ 1000 . Preferably, $\geq 50\%$ of the **electrolyte** forming the charge transferring layer is II (Z2 = 5- or 6-membered N contg. arom ring cation, R2 = alkyl or alkenyl group, a = 1-3), esp. III (R3 = various substituents, b = 0-5 integer) or IV (E = s, O, or -NR5-, R4 and R5 = substituents, c = 0-3 integer).

IT **585-48-8**
 (electrolytes contg. arom. nitrogen compds. for photoelectrochem. cells)
 RN 585-48-8 HCA
 CN Pyridine, 2,6-bis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



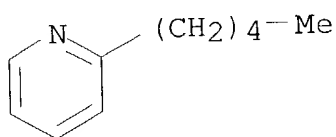
IC ICM H01M014-00
 ICS H01L031-04
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST photoelectrochem **cell electrolyte** arom nitrogen compd
 IT Photoelectrochemical **cells**
 (electrolytes contg. arom. nitrogen compds. for photoelectrochem. cells)
 IT 108-47-4 108-48-5 108-75-8 109-06-8 311-28-4,
 Tetrabutylammonium iodide **585-48-8** 644-98-4 874-81-7
 16632-09-0 27361-16-6 32353-64-3 65039-05-6 70644-45-0
 70715-19-4 178631-05-5 258273-67-5 258279-35-5 258279-38-8
 258279-41-3 261523-29-9 261523-30-2 261523-31-3 261523-32-4
 261523-33-5
 (electrolytes contg. arom. nitrogen compds. for photoelectrochem. cells)

L68 ANSWER 4 OF 4 HCA COPYRIGHT 2004 ACS on STN
 63:89852 Original Reference No. 63:16566a-d Anion-exchange resins derived from poly(phenylene ethers). (General Electric Co.). NL 293624 **19650412**, 25 pp. (Unavailable). APPLICATION: NL 19630605.

GI For diagram(s), see printed CA Issue.
 AB Poly(phenylene ethers) with the repeating unit I, in which R is H, halogen, a hydrocarbyl, a halo hydrocarbyl, a hydrocarbyloxy, or a halo hydrocarbyloxy group, such as poly(2,6-dimethyl-p-phenylene ether) (II) or poly(2-methyl-p-phenylene ether), react with halogenating agents to introduce halogen atoms into the Me groups.

The halogenated polymers then react with NH_3 , amines, such as Me_3N and $(\text{Me}_2\text{NCH}_2)$, (III), sulfides, such as Me_2S , or tertiary phosphines, such as Bu_3P . The products are treated with a strong base to obtain anion-exchange resins in the form of the free base. The resins are useful for the treatment of water and the removal of ions from solns. They are also useful as solid **electrolytes** in fuel **cells** and as antistatic coatings. Thus, Br was added to a soln. of II in sym-tetrachloroethane and the mixt. refluxed for .apprx.70 min. The brominated polymer was pptd. by pouring the reaction mixt. into MeOH. A soln. was prepd. by stirring 3 g. of the brominated polymer (1.89 Br atoms per repeating unit) in 150 ml. C_6H_6 . III (5 g.) was added and the mixt. was stirred for 4 hrs. The cross-linked polymer was filtered, washed, and dried; yield 4.2 g. The polymer was insol. in solvents and did not swell in hot H_2O . It was treated with NaOH to introduce quaternary ammonium hydroxide groups.

IT **2294-76-0**, Pyridine, 2-pentyl-
 (anion-exchangers from halogenated polyoxyphenylene and)
 RN 2294-76-0 HCA
 CN Pyridine, 2-pentyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IC BOLD
 CC 48 (Plastics Technology)
 IT 75-18-3, Methyl sulfide 75-50-3, Trimethylamine 97-84-7,
 1,3-Butanediamine, N,N,N',N'-tetramethyl- 108-01-0, Ethanol,
 2-(dimethylamino)- 110-18-9, Ethylenediamine, N,N,N',N'-
 tetramethyl- **2294-76-0**, Pyridine, 2-pentyl- 7803-51-2,
 Phosphine
 (anion-exchangers from halogenated polyoxyphenylene and)

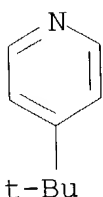
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L69 ANSWER 1 OF 6 HCA COPYRIGHT 2004 ACS on STN
 136:297391 Self bleaching photoelectrochemical-electrochromic device.
 Bechinger, Clemens S.; Gregg, Brian A. (Midwest Research Institute,
 USA). U.S. US 6369934 B1 20020409, 12 pp., Cont.-in-part of U.S.
 Ser. No. 655,724, abandoned. (English). CODEN: USXXAM.
 APPLICATION: US 2000-631201 20000801. PRIORITY: US 1996-655724
 19960530.

AB A photoelectrochem.-electrochromic device comprises a first
 transparent electrode and a second transparent electrode in

parallel, spaced relation to each other. The first transparent electrode is elec. connected to the second transparent electrode. An electrochromic material is applied to the first transparent electrode and a nanoporous semiconductor film having a dye adsorbed therein is applied to the second transparent electrode. An **electrolyte** layer contacts the electrochromic material and the nanoporous semiconductor film. The **electrolyte** layer has a redox couple whereby upon application of light, the nanoporous semiconductor layer dye absorbs the light and the redox couple oxidizes producing an elec. field across the device modulating the effective light transmittance through the device.

IT 3978-81-2, 4-tert-Butylpyridine
(self bleaching photoelectrochem.-electrochromic device)
RN 3978-81-2 HCA
CN Pyridine, 4-(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)

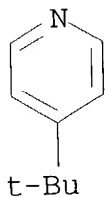


IC ICM G02F001-15
ICS G09G003-19
NCL 359265000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 74
IT 108-32-7, Propylene carbonate 141-78-6, Ethyl acetate, uses
474-25-9, Chenodeoxycholic acid 1643-19-2, Tetrabutylammonium
bromide 3978-81-2, 4-tert-Butylpyridine 7791-03-9,
Lithium perchlorate 9004-74-4D, Poly(ethylene
glycol)monomethyl ether, lithium complex 9011-14-7, Pmma
10377-51-2, Lithium iodide 78338-26-8 188817-68-7
302599-44-6
(self bleaching photoelectrochem.-electrochromic device)

L69 ANSWER 2 OF 6 HCA COPYRIGHT 2004 ACS on STN
136:142661 Self bleaching photoelectrochemical-electrochromic device.
Gregg, Brian A.; Bechinger, Clemens S. (Midwest Research Institute,
USA). PCT Int. Appl. WO 2002010852 A1 20020207, 28 pp. DESIGNATED
STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA,
CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS,
LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU,
SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA,
ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG,

CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2.
APPLICATION: WO 2001-US22823 20010719. PRIORITY: US 2000-631201 20000801.

- AB A photoelectrochem.-electrochromic device comprising a first transparent electrode and a second transparent electrode in parallel, spaced relation to each other. The first transparent electrode is elec. connected to the second transparent electrode. An electrochromic material is applied to the first transparent electrode and a nanoporous semiconductor film having a dye adsorbed therein is applied to the second transparent electrode. An **electrolyte** layer contacts the electrochromic material and the nanoporous semiconductor film. The **electrolyte** layer has a redox couple whereby upon application of light, the nanoporous semiconductor layer dye absorbs the light and the redox couple oxidizes producing an elec. field across the device modulating the effective light transmittance through the device.
- IT **3978-81-2**, 4-tert-Butylpyridine
(use in self bleaching photoelectrochem.-electrochromic device)
- RN 3978-81-2 HCA
- CN Pyridine, 4-(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



- IC ICM G02F001-163
ICS G02F001-153; G02F001-15; E06B003-66
- CC 74-9 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 72
- IT 108-32-7, Propylene carbonate 474-25-9, Chenodeoxycholic acid
3978-81-2, 4-tert-Butylpyridine 7553-56-2, Iodine, uses
7791-03-9, **Lithium** perchlorate 9004-74-4, Polyethylene glycol monomethyl ether 10377-51-2, **Lithium** iodide
99837-92-0 141460-19-7 188817-68-7
(use in self bleaching photoelectrochem.-electrochromic device)

L69 ANSWER 3 OF 6 HCA COPYRIGHT 2004 ACS on STN
133:364378 High efficiency dye-sensitized nanocrystalline solar cells based on sputter deposited Ti oxide films. Gomez, M. M.; Lu, J.; Olsson, E.; Hagfeldt, A.; Granqvist, C. G. (Department of Materials Science, Angstrom Laboratory, Uppsala University, Uppsala, SE-751 21, Swed.). Solar Energy Materials and Solar Cells, 64(4), 385-392

(English) 2000. CODEN: SEMCEQ. ISSN: 0927-0248.

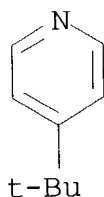
Publisher: Elsevier Science B.V..

- AB Nanocryst. solar cells were made by incorporation of cis-dithiocyanato-bis(2,2'-bipyridyl-4,4'-dicarboxylate) ruthenium (II) into sputter deposited titanium oxide films. After a pyridine treatment, it was possible to achieve a photoelec. conversion efficiency as high as 7% for a solar intensity of 100 W/m² - almost the same as for conventional nanocryst. cells with colloiddally prepd. titanium oxide. Transmission electron microscopy indicated a parallel penniform microstructure, and secondary ion mass spectroscopy showed that the dye incorporation was uniform except in the bottom parts of the sputtered films where a decreased porosity seems to limit the penetration of the dye.

IT 3978-81-2, 4-tert-Butylpyridine
(electrolyte; high efficiency dye-sensitized nanocryst.
solar cells based on sputter deposited Ti oxide films)

RN 3978-81-2 HCA

CN Pyridine, 4-(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 110-67-8, 3-Methoxypropionitrile 3978-81-2,
4-tert-Butylpyridine 7553-56-2, Iodine, uses 10377-51-2,
Lithium iodide

(electrolyte; high efficiency dye-sensitized nanocryst.
solar cells based on sputter deposited Ti oxide films)

L69 ANSWER 4 OF 6 HCA COPYRIGHT 2004 ACS on STN

132:158815 Parameters Influencing Charge Recombination Kinetics in Dye-Sensitized Nanocrystalline Titanium Dioxide Films. Haque, Saif A.; Tachibana, Yasuhiro; Willis, Richard L.; Moser, Jacques E.; Graetzel, Michael; Klug, David R.; Durrant, James R. (Centre for Photomolecular Sciences Departments of Chemistry and Biochemistry, Imperial College of Science Technology and Medicine, London, SW7 2AY, UK). Journal of Physical Chemistry B, 104(3), 538-547 (English) 2000. CODEN: JPCBFK. ISSN: 1089-5647.

Publisher: American Chemical Society.

AB Optical excitation of RuII(2,2'-bipyridyl-4,4'-dicarboxylate)₂(NCS)₂-sensitized nanocryst. TiO₂ films results in injection of an electron into the semiconductor. This paper addresses the kinetics of charge recombination which follows this charge sepn. reaction. These

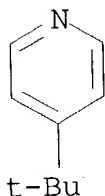
charge recombination kinetics were found to be strongly dependent upon excitation intensity, **electrolyte** compn., and the application of an elec. bias to the TiO₂ film. For excitation intensities resulting in less than one excited dye mol./TiO₂ particle, the recombination kinetics were independent of excitation intensity. Increasing the excitation intensity above this level resulted in a rapid acceleration in the charge recombination kinetics. Similarly, for pos. elec. potentials applied to the TiO₂ electrode, the recombination kinetics were independent of applied potential. If the applied potential was more neg. than a threshold potential V_{kin} , a rapid acceleration of the charge recombination kinetics was again obsd., for example from .apprx.1 ms at +0.1 V vs Ag/AgCl to .apprx.3 ps at -0.8 V (.apprx.108 fold increase in the rate). Moreover, at a const. applied potential the charge recombination kinetics were found to be strongly dependent upon **electrolyte** compn. (up to 106-fold change in rate). This strong dependence upon the **electrolyte** compn. was found to be assocd. with shifts in the threshold potential V_{kin} . Spectroelectrochem. measurements were used to monitor the shift in the trap/conduction band d. of states induced by the **electrolyte** compn. A direct correlation was obsd. between the threshold voltage V_{kin} obsd. from kinetic measurements, and the threshold voltage for electron occupation of conduction band/trap states of the TiO₂ obsd. from spectroelectrochem. measurements. This direct correlation was obsd. for a wide range of **electrolyte** compns. including protic and aprotic solvents and the addn. of Li⁺ ions and 4-tert-butylpyridine. The authors conclude that the charge recombination kinetics in such dye-sensitized films are strongly dependent upon the electron occupation in trap/conduction band states of the TiO₂ film. This occupation may be modulated by variations in light intensity, applied elec. potential, and **electrolyte** compn. These results are discussed with relevance to the function of dye-sensitized photoelectrochem. devices.

IT 3978-81-2, 4-tert-Butylpyridine

(**electrolyte**; kinetics of charge recombination in dye photosensitizer-TiO₂ film system as function of excitation intensity and **electrolyte** compn. and application of elec. bias to TiO₂ film)

RN 3978-81-2 HCA

CN Pyridine, 4-(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



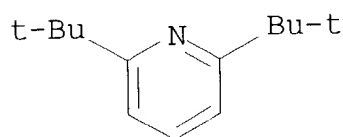
- CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 72
- IT 3978-81-2, 4-tert-Butylpyridine 7791-03-9, **Lithium** perchlorate
(**electrolyte**; kinetics of charge recombination in dye photosensitizer-TiO₂ film system as function of excitation intensity and **electrolyte** compn. and application of elec. bias to TiO₂ film)
- IT 1923-70-2, Tetrabutylammonium perchlorate 35895-70-6, Tetrabutylammonium triflate
(**electrolyte**; kinetics of charge recombination in dye photosensitizer-TiO₂ film system as function of excitation intensity and **electrolyte** compn. and application of elec. bias to TiO₂ film)
- IT 17341-24-1, **Lithium**(1+), processes
(kinetics of charge recombination in dye photosensitizer-TiO₂ film system as function of excitation intensity and **electrolyte** compn. and application of elec. bias to TiO₂ film)
- L69 ANSWER 5 OF 6 HCA COPYRIGHT 2004 ACS on STN
130:296329 A Mechanistic Study of the Influence of Proton Transfer Processes on the Behavior of Thiol/Disulfide Redox Couples. Shouji, Eiichi; Buttry, Daniel A. (Department of Chemistry, University of Wyoming, Laramie, WY, 82071-3838, USA). Journal of Physical Chemistry B, 103(12), 2239-2247 (English) 1999. CODEN: JPCBFK. ISSN: 1089-5647. Publisher: American Chemical Society.
- AB The mechanism of the oxidn. of 2-mercapto-5-Me-1,3,4-thiadiazole (McMT) to its disulfide dimer and its subsequent redn. was examd. with a combined approach employing exptl. data and digital simulation. To elucidate the influence of proton transfers on these redox processes, special attention was paid to the influence of various bases, including NEt₃, pyridine, 3-chloropyridine, lutidine and 2,6-di-tert-butylpyridine, and proton donors, including methanesulfonic acid and trifluoromethanesulfonic acid, on both the oxidn. and redn. reactions. From detailed comparisons of the exptl. data with simulations of several mechanistic models, proton transfer pathways have a pronounced influence on both the oxidative and

reductive pathways. In particular, McMT oxidn. is facilitated by a rapid bimol. proton transfer from McMT to weak bases such as Py that produces McMT⁻, the thiolate form, which is then oxidized. There is no such facilitation in the presence of the sterically hindered base 2,6-di-tert-butylpyridine, suggesting that the facilitation occurs through the formation of a discrete H-bonded complex. The overall kinetic scheme by which these redox processes proceed both in the presence and absence of proton transfer agents is discussed, esp. with regard to the potential use of a related dithiolate compd. as a cathode material in **Li** secondary **batteries**.

IT **585-48-8**, 2,6-Di-tert-butylpyridine
(mechanism and influence of proton transfer on behavior of thiol/disulfide redox couples)

RN 585-48-8 HCA

CN Pyridine, 2,6-bis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



CC 22-7 (Physical Organic Chemistry)
Section cross-reference(s): 52, 72

IT Secondary **batteries**
(**lithium**; mechanism and influence of proton transfer on behavior of thiol/disulfide redox couples)

IT 110-86-1, Pyridine, reactions 121-44-8, reactions **585-48-8**
, 2,6-Di-tert-butylpyridine 626-60-8, 3-Chloropyridine
27175-64-0, Lutidine 29490-19-5 66666-63-5 187107-99-9
187108-00-5 223445-91-8 223445-92-9 223445-93-0 223445-94-1,
reactions

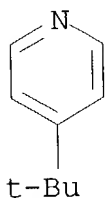
(mechanism and influence of proton transfer on behavior of thiol/disulfide redox couples)

L69 ANSWER 6 OF 6 HCA COPYRIGHT 2004 ACS on STN

130:69000 Fabrication of quasi-solid-state dye-sensitized TiO₂ solar cells using low molecular weight gelators. Kubo, Wataru; Murakoshi, Kei; Kitamura, Takayuki; Wada, Yuji; Hanabusa, Kenji; Shirai, Hirofusa; Yanagida, Shozo (Material and Life Science, Graduate School of Engineering, Osaka University, Suita, 565-0871, Japan). Chemistry Letters (12), 1241-1242 (English) **1998**. CODEN: CMLTAG. ISSN: 0366-7022. Publisher: Chemical Society of Japan.

AB Low mol. wt. gelators were applied to solidify the redox **electrolyte** in dye-sensitized TiO₂ solar cells. The resulting quasi solid-state dye-sensitized solar cells showed comparable efficiency and higher stability than the similar cell with the liq. phase redox **electrolyte**.

IT 3978-81-2, 4-tert-Butylpyridine
(quasi solid-state dye-sensitized TiO₂ solar cell manuf. using
low mol. wt. gelators)
RN 3978-81-2 HCA
CN Pyridine, 4-(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



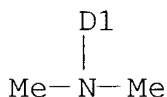
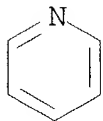
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 3978-81-2, 4-tert-Butylpyridine 7553-56-2, Iodine, uses
10377-51-2, Lithium iodide 26856-69-9,
Methoxypropionitrile 218151-78-1
(quasi solid-state dye-sensitized TiO₂ solar cell manuf. using
low mol. wt. gelators)

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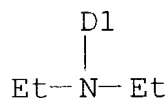
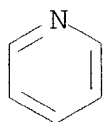
L70 ANSWER 1 OF 13 HCA COPYRIGHT 2004 ACS on STN
136:234636 Organic amines as additives for **electrolytes** of
electrochemical devices. Jungnitz, Michael; Schmidt, Michael;
Kuehner, Andreas; Buchholz, Herwig; Prakash, Surya (Merck Patent
GmbH, Germany). Eur. Pat. Appl. EP 1187244 A2 20020313, 15 pp.
DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI,
LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (German). CODEN:
EPXXDW. APPLICATION: EP 2001-118762 20010808. PRIORITY: US
2000-PV230711 20000907.

AB Org. amine additives are used to vary the acid content in aprotic
electrolyte systems in **electrochem. cells**
(**batteries** and double-layer capacitors), esp. Li
ion **batteries**. The additive is used in an amt. of
≤10% in relation to the wt. of the **electrolyte**
system. The aprotic **electrolyte** contains a solvent and a
supporting **electrolyte**.

IT 57951-36-7 113172-69-3
(org. amines as additives for **electrolytes** of
electrochem. devices)
RN 57951-36-7 HCA
CN Pyridinamine, N,N-dimethyl- (9CI) (CA INDEX NAME)



RN 113172-69-3 HCA
CN Pyridinamine, N,N-diethyl- (9CI) (CA INDEX NAME)



IC ICM H01M010-40
ICS H01G009-02
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 76
ST **lithium battery electrolyte** additive
org amine; double layer capacitor **electrolyte** additive org
amine
IT Capacitors
(double layer; org. amines as additives for **electrolytes**
of electrochem. devices)
IT Secondary **batteries**
(**lithium**; org. amines as additives for
electrolytes of electrochem. devices)
IT **Battery electrolytes**
(org. amines as additives for **electrolytes** of
electrochem. devices)
IT Amines, uses
(org. amines as additives for **electrolytes** of
electrochem. devices)
IT 67-68-5, DmsO, uses 68-12-2, Dmf, uses 75-05-8, Acetonitrile,

uses 75-12-7, Formamide, uses 75-52-5, Nitromethane, uses
 79-20-9, Methyl acetate 96-47-9, 2-Methyltetrahydrofuran
 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate
 105-58-8, Diethyl carbonate 107-31-3, Methyl formate 108-32-7,
 Propylene carbonate 108-32-7D, Propylene carbonate, deriv.
 109-99-9, Thf, uses 109-99-9D, Thf, deriv. 110-71-4,
 1,2-Dimethoxyethane 123-91-1, Dioxane, uses 126-33-0, Sulfolane
 149-73-5, Trimethoxymethane 616-38-6, Dimethyl carbonate
 623-53-0, Ethyl methyl carbonate 646-06-0, 1,3-Dioxolane
 646-06-0D, Dioxolane, deriv. 4437-85-8, Butylene carbonate
 19836-78-3, 3-Methyl-2-oxazolidinone 21324-40-3, **Lithium**
 hexafluorophosphate

(org. amines as additives for **electrolytes** of
 electrochem. devices)

IT 64-04-0, 2-Phenylethylamine 93-88-9 582-22-9,
 2-Phenylpropylamine 589-08-2 1122-58-3, N,N-Dimethyl-4-
 aminopyridine 1126-71-2 1199-99-1 1202-55-7 2038-57-5,
 3-Phenylpropylamine 4265-99-0 5214-29-9 5300-21-0 7560-81-8
 13125-62-7 13214-66-9, 4-Phenylbutylamine 16775-52-3
 18970-59-7 22002-68-2 23580-89-4 27640-12-6 27954-96-7
 33132-91-1 34059-12-6 34577-88-3 36321-00-3 38135-56-7,
 3-Phenylbutylamine 39206-52-5 40192-26-5 **57951-36-7**
 65032-09-9 91339-13-8 91339-15-0 **113172-69-3**
 402920-83-6 402920-84-7

(org. amines as additives for **electrolytes** of
 electrochem. devices)

L70 ANSWER 2 OF 13 HCA COPYRIGHT 2004 ACS on STN

136:88337 Dye-sensitized photoelectric transducer. Yanagida, Shozo;
 Ikeda, Masaaki; Shigaki, Koichiro; Inoue, Teruhisa (Nippon Kayaku
 Kabushiki Kaisha, Japan). PCT Int. Appl. WO 2002001667 A1 20020103,
 25 pp. DESIGNATED STATES: W: CA, CN, JP, KR, US; RW: AT, BE, CH,
 CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR.
 (Japanese). CODEN: PIXXD2. APPLICATION: WO 2001-JP5452 20010626.
 PRIORITY: JP 2000-195464 20000629.

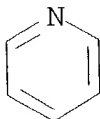
AB The invention aims at developing an expensive photoelec. transducer
 exhibiting a high conversion efficiency. The solar **battery**
 , using the photoelec. transducer, comprises a thin film made of
 semiconductor fine particles sensitized by having a specific azo dye
 supported thereon. The photoelec. transducer contains arom. group
 to which at least one group, selected from carboxyl, hydroxyl,
 phosphoric acid, phosphoric ester, or mercapto, is bonded either
 directly or indirectly. Another arom. group is substituted by, at
 least one, electron-donating group.

IT **118676-08-7**

(dye-sensitized photoelec. transducer for solar **battery**
)

RN 118676-08-7 HCA

CN Pyridine, (1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



D1-Bu-t

IC ICM H01M014-00

ICS H01L031-04

CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 76, 77

IT Dyes

Photoelectric devices

Semiconductor materials

Solar cells

(dye-sensitized photoelec. transducer for solar **battery**

)

IT Transducers

(photoelec.; dye-sensitized photoelec. transducer for solar
battery)

IT 101-51-9 3566-94-7 6434-57-7 7440-06-4, Platinum, uses
13463-67-7, Titania, uses 14847-54-2 57741-47-6 61212-66-6
85720-86-1 93935-92-3 141460-19-7 386206-87-7 386206-88-8
386206-89-9 386206-90-2 386206-91-3 386206-92-4 386206-93-5
386206-94-6 386206-95-7 386206-97-9 386207-00-7 386207-03-0
386207-05-2 386207-06-3 386207-07-4 386207-08-5 386207-09-6
386207-10-9 386207-11-0 386207-12-1 386207-13-2 386207-14-3
386207-15-4 386207-16-5 386207-17-6 386207-18-7 386207-19-8
386207-20-1 386207-21-2 386207-22-3 386207-23-4 386213-80-5
(dye-sensitized photoelec. transducer for solar **battery**

)

IT 96-49-1, Ethylene carbonate 7550-45-0, Titanium tetrachloride,
uses 10377-51-2, **Lithium** iodide

(dye-sensitized photoelec. transducer for solar **battery**

)

IT 75-05-8, Acetonitrile, reactions 110-67-8 631-40-3,
Tetra(propylammonium) iodide 7553-56-2, Iodine, reactions
118676-08-7 218151-78-1

(dye-sensitized photoelec. transducer for solar **battery**

)

L70 ANSWER 3 OF 13 HCA COPYRIGHT 2004 ACS on STN
135:7758. Photoelectric converters and photoelectrochemical cells.

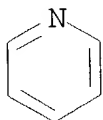
Nakamura, Yoshisada (Fuji Photo Film Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001143771 A2 **20010525**, 26 pp. (Japanese).
CODEN: JKXXAF. APPLICATION: JP 1999-322911 19991112.

AB The photoelec. converters have a conductive support, a layer of pigment sensitized semiconductor particles, a charge transporting layer, and a semiconductor or insulator layer is between the support and the semiconductor particle layer. Photoelectrochem. cells contain the converters.

IT **118676-08-7**, tert-Butylpyridine
(**electrolytes** for photoelectrochem. **cells**
contg. semiconductor or insulator layer coated conductive support)

RN 118676-08-7 HCA

CN Pyridine, (1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



D1-Bu-t

IC ICM H01M014-00
ICS H01L031-04

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 1335-23-5, Copper iodide 1738-36-9, Methoxyacetonitrile

7553-56-2, Iodine, uses 10377-51-2, **Lithium** iodide

65039-05-6 104934-51-2 **118676-08-7**, tert-Butylpyridine

143314-16-3 218151-78-1 340770-93-6

(**electrolytes** for photoelectrochem. **cells**
contg. semiconductor or insulator layer coated conductive support)

L70 ANSWER 4 OF 13 HCA COPYRIGHT 2004 ACS on STN

134:134093 Manufacture of polymer **electrolytes** for photoelectrochemical **cells** and the cells. Shigaki, Koichiro; Mori, Tetsu; Ikeda, Masaaki; Yanagida, Shozo (Nippon Kayaku Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001028276 A2 **20010130**, 11 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-111648 20000413. PRIORITY: JP 1999-106598 19990414.

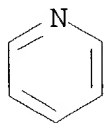
AB The polymer **electrolytes** are prepd. by impregnating a polymer matrix with a redox type **electrolyte**.

IT **118676-08-7**, tert-Butylpyridine
(manuf. of halide redox **electrolyte** soln. impregnated polymer **electrolytes** for photoelectrochem.)

cells)

RN 118676-08-7 HCA

CN Pyridine, (1,1-dimethylethyl)- (9CI) (CA INDEX NAME)

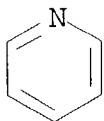


D1-Bu-t

- IC ICM H01M014-00
ICS C08F014-18; C08F016-14; C08F020-18; C08F020-34; C08K005-00;
C08L101-00; H01G009-035; H01G009-028; H01L031-04
- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
- ST photoelectrochem **cell** redox polymer **electrolyte**
manuf
- IT **Electrolytes**
Photoelectrochemical cells
(manuf. of halide redox **electrolyte** soln. impregnated
polymer **electrolytes** for photoelectrochem.
cells)
- IT 108-32-7, Propylene carbonate 112-27-6, Triethylene glycol
764-99-8D, polymers 818-61-1D, 2-Hydroxyethyl acrylate,
perfluoroalkyl ethers 1320-67-8, Propylene glycol monomethyl ether
7553-56-2, Iodine, uses 27015-29-8 34624-61-8
118676-08-7, tert-Butylpyridine 126095-71-4 132043-12-0
218151-78-1 321852-72-6 321852-73-7
(manuf. of halide redox **electrolyte** soln. impregnated
polymer **electrolytes** for photoelectrochem.
cells)
- IT 10377-51-2, **Lithium** iodide 321852-69-1
(manuf. of halogen/halide redox **electrolyte** soln.
impregnated polymer **electrolytes** for photoelectrochem.
cells)
- L70 ANSWER 5 OF 13 HCA COPYRIGHT 2004 ACS on STN
132:56801 Flexible solid-state photoelectrochromic windows. Pichot,
Francois; Ferrere, Suzanne; Pitts, Roland J.; Gregg, Brian A.
(National Renewable Energy Laboratory, Golden, CO, 80401, USA).
Journal of the Electrochemical Society, 146(11), 4324-4326 (English)
1999. CODEN: JES0AN. ISSN: 0013-4651. Publisher:
Electrochemical Society.
- AB Photoelectrochromic smart window technol. is extended to include the
use of flexible substrates and solid-state **electrolytes**.

This should facilitate their application as retrofit modifications of office windows, where, by blocking incoming solar irradiation, they could substantially lower air-conditioning costs. These devices are based on a dye-sensitized TiO₂ electrode coupled with a 500 nm thick WO₃ electrochromic counter electrode, separated by a cross-linked polymer **electrolyte** containing LiI. A novel method for preparing conducting nanoporous TiO₂ films is described that allows for the construction of these devices on flexible organic substrates. Colloidal solutions of TiO₂ free of surfactants were spin-coated onto In-Sn oxide coated polyester substrates, resulting in highly transparent films ranging from 100 nm to 1 μ m thickness. Upon annealing at 100°, these films were strongly adherent and displayed excellent photoconductivity as shown by their current-voltage characteristics. The devices typically transmit 75% of visible light in the bleached state. After a few minutes of exposure to white light (75 mW/cm²), the windows turn dark blue, transmitting only 30% of visible light. They spontaneously bleach back to their initial non-colored state upon removal of the light source.

IT 118676-08-7, tert-Butyl-pyridine
(flexible solid-state photoelectrochromic windows in system
contg.)
RN 118676-08-7 HCA
CN Pyridine, (1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



D1-Bu-t

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 72, 78
ST flexible solid state photoelectrochromic window; titanium dioxide tungsten trioxide **lithium** intercalation window
IT Windows
Windows
(electrochromic, photo-; flexible solid-state photoelectrochromic windows based on titanium dioxide and tungsten trioxide affected by **lithium** intercalation)
IT Intercalation
UV and visible spectra
(flexible solid-state photoelectrochromic windows based on titanium dioxide and tungsten trioxide affected by

- lithium** intercalation)
- IT IR spectra
(near-IR; flexible solid-state photoelectrochromic windows based on titanium dioxide and tungsten trioxide affected by **lithium** intercalation)
- IT Electrochromic devices
Electrochromic devices
(windows, photo-; flexible solid-state photoelectrochromic windows based on titanium dioxide and tungsten trioxide affected by **lithium** intercalation)
- IT 10377-51-2, **Lithium** iodide 25852-47-5, Polyethylene glycol-dimethacrylate
(flexible solid-state photoelectrochromic windows based on system contg. titanium dioxide and tungsten oxide and dye)
- IT 1332-29-2, Tin oxide 50926-11-9, Indium tin oxide
(flexible solid-state photoelectrochromic windows based on titanium dioxide and tungsten trioxide affected by **lithium** intercalation)
- IT 11083-77-5, Tungsten bronze 37349-20-5, **Lithium** tungsten oxide
(flexible solid-state photoelectrochromic windows based on titanium dioxide and tungsten trioxide affected by **lithium** intercalation)
- IT 7782-41-4, Fluorine, uses
(flexible solid-state photoelectrochromic windows based on titanium dioxide and tungsten trioxide affected by **lithium** intercalation)
- IT 7439-93-2, **Lithium**, uses
(flexible solid-state photoelectrochromic windows based on titanium dioxide and tungsten trioxide affected by **lithium** intercalation)
- IT 1314-35-8, Tungsten trioxide, properties 13463-67-7, Titanium dioxide, properties
(flexible solid-state photoelectrochromic windows based on titanium dioxide and tungsten trioxide affected by **lithium** intercalation)
- IT 7553-56-2, Iodine, uses **118676-08-7**, tert-Butyl-pyridine
(flexible solid-state photoelectrochromic windows in system contg.)

L70 ANSWER 6 OF 13 HCA COPYRIGHT 2004 ACS on STN

132:13877 **Lithiated** manganese oxide for **battery**
cathodes. Pillai, G. Chithambarathanu (Carus Chemical Company, USA). U.S. US 5997839 A **19991207**, 10 pp., Cont.-in-part of U.S. 5,759,510. (English). CODEN: USXXAM. APPLICATION: US 1998-77854 19980602. PRIORITY: US 1996-726323 19961003; WO 1997-US17081 19970930.

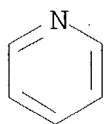
AB A **lithiated** manganese dioxide is produced for secondary

battery cathodes by reducing an alkali metal (per)manganate, mixing the resulting amorphous MnO₂ with a molar excess of a **Li** salt, and subjecting the mixt. to low (150-550°C, 2-72 h) and high temp. (500-900°C) calcination steps. The reducing agent is an org. compd., esp. a pyridine such as picoline.

IT 1333-41-1, Picoline
(reducing agents; **lithiated** manganese oxide prodn. for **battery** cathodes)

RN 1333-41-1 HCA

CN Pyridine, methyl- (9CI) (CA INDEX NAME)



D1-Me

IC ICM C01G045-12

NCL 423599000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49

ST **lithiated** manganese oxide **battery** cathode

IT **Battery** cathodes

Calcination

Reducing agents

Reduction

Secondary **batteries**

(**lithiated** manganese oxide prodn. for **battery** cathodes)

IT 1313-13-9P, Manganese dioxide, uses 12057-17-9P, **Lithium** manganese oxide (LiMn₂O₄) 39457-42-6P, **Lithium** manganese oxide 197667-28-0DP, Manganese oxide (Mn₂O₄), **lithiated** (**lithiated** manganese oxide prodn. for **battery** cathodes)

IT 1310-58-3, Potassium hydroxide, processes 1310-73-2, Sodium hydroxide, processes
(**lithiated** manganese oxide prodn. for **battery** cathodes)

IT 554-13-2, **Lithium** carbonate 1310-65-2, **Lithium** hydroxide 1310-66-3, **Lithium** hydroxide hydrate 7722-64-7, Potassium permanganate 7790-69-4, **Lithium** nitrate 10101-50-5, Sodium permanganate 10294-64-1, Potassium manganate 10377-48-7, **Lithium** sulfate 12057-24-8, **Lithium** oxide, reactions 15702-33-7, Sodium manganate

(**lithiated** manganese oxide prodn. for **battery**
cathodes)

IT 50-99-7, D-Glucose, reactions 67-63-0, 2-Propanol, reactions
88-19-7, o-Toluene sulfonamide 110-17-8, Fumaric acid, reactions
1333-41-1, Picoline
(reducing agents; **lithiated** manganese oxide prodn. for
battery cathodes)

L70 ANSWER 7 OF 13 HCA COPYRIGHT 2004 ACS on STN

128:284602 **Lithiated** manganese oxide preparation for
rechargeable **lithium-manganese batteries**.

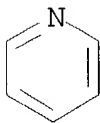
Pillai, G. Chithambarathanu (Carus Chemical Co., USA; Pillai, G.
Chithambarathanu). PCT Int. Appl. WO 9814403 A1 **19980409**,
32 pp. DESIGNATED STATES: W: AL, AM, AT, AU, AZ, BA, BB, BG, BR,
BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, ID, IL, IS,
JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN,
MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR,
TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM;
RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, DE, DK, ES, FI, FR, GA, GB,
GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English).
CODEN: PIXXD2. APPLICATION: WO 1997-US17081 19970930. PRIORITY: US
1996-726323 19961003.

AB **Lithiated** manganese dioxide is prep'd. from amorphous MnO₂
using low and high temp. calcination steps. The MnO₂ is a product
of the redn. of an alkali metal permanganate or manganate using an
org. comp'd., e.g., an alkyl-substituted pyridine, under alk.
conditions. The resulting amorphous reduced MnO₂ is blended with a
lithium comp'd., e.g., LiOH, in stoichiometric excess. The
blend is calcined at 150-550°C for 2-72 h. The calcined
complex is washed with an aq. LiOH soln. at pH <7 (pH 6-6.5) to
provide a Li/Mn ratio of 1:2. The complex is calcined at
500-900°C for sufficient time to give Li_xMn₂O₄ where 0 < x < 2.
The resulting Li_xMn₂O₄ can be used in a **battery** cathode to
provide an emf. of 3-4 V.

IT **1333-41-1**, Picoline
(**lithiated** manganese oxide prepn. for rechargeable
lithium-manganese batteries)

RN 1333-41-1 HCA

CN Pyridine, methyl- (9CI) (CA INDEX NAME)



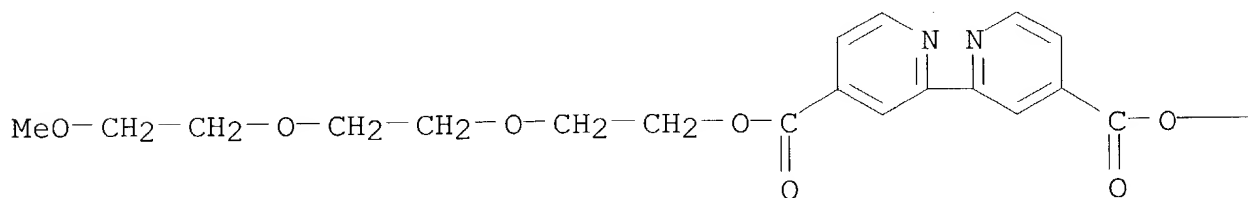
D1-Me

- IC ICM C01G045-12
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST **lithium** manganese oxide **battery** cathode
 IT **Battery** cathodes
 (**lithiated** manganese oxide prepn. for rechargeable
 lithium-manganese batteries)
 IT Secondary **batteries**
 (**lithium; lithiated** manganese oxide prepn.
 for rechargeable **lithium-manganese batteries**)
 IT 1313-13-9P, Manganese dioxide, preparation
 (amorphous; **lithiated** manganese oxide prepn. for
 rechargeable **lithium-manganese batteries**)
 IT 1313-13-9DP, Manganese dioxide, **lithiated** 12057-17-9P,
Lithium manganese oxide LiMn2O4 39457-42-6P,
Lithium manganese oxide 197667-28-0DP, Manganese oxide
 (Mn2O4), **lithiated**
 (**lithiated** manganese oxide prepn. for rechargeable
 lithium-manganese batteries)
 IT 50-99-7, D-Glucose, reactions 67-63-0, 2-Propanol, reactions
 88-19-7, o-Toluene sulfonamide 110-17-8, Fumaric acid, reactions
 110-86-1D, Pyridine, alkyl derivs., reactions 554-13-2,
Lithium carbonate 1310-58-3, Potassium hydroxide,
 reactions 1310-65-2, **Lithium** hydroxide 1310-73-2,
 Sodium hydroxide, reactions **1333-41-1**, Picoline
 7722-64-7, Potassium permanganate 7790-69-4, **Lithium**
 nitrate 10101-50-5, Sodium permanganate 10294-64-1, Potassium
 manganate 10377-48-7, **Lithium** sulfate 12057-24-8,
Lithium oxide, reactions 15702-33-7, Sodium manganate
 (**lithiated** manganese oxide prepn. for rechargeable
 lithium-manganese batteries)
- L70 ANSWER 8 OF 13 HCA COPYRIGHT 2004 ACS on STN
 127:206153 Transport and Electron Transfer Dynamics in a
 Polyether-Tailed Cobalt Bipyridine Molten Salt: **Electrolyte**
 Effects. Williams, Mary Elizabeth; Lyons, Leslie J.; Long, Jeffrey
 W.; Murray, Royce W. (Kenan Laboratories of Chemistry, University of
 North Carolina, Chapel Hill, NC, 27599-3290, USA). Journal of

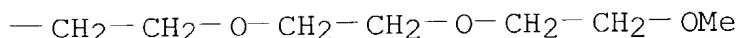
Physical Chemistry B, 101(38), 7584-7591 (English) 1997.
 CODEN: JPCBFK. ISSN: 1089-5647. Publisher: American Chemical Society.

- AB Transport, ionic cond., and viscosity properties of the metal complex molten salt $[\text{Co}(\text{bpy}(\text{CO}_2\text{MePEG}-350)_2)_3](\text{ClO}_4)_2$ (MePEG = monomethyl-terminated polyether, av. MW = 350) are strongly affected by dissoln. of LiClO_4 **electrolyte** in the melt. The phys. self-diffusion of the $[\text{Co}(\text{bpy}(\text{CO}_2\text{MePEG}-350)_2)_3]^{2+}$ and the rate of $[\text{Co}(\text{bpy}(\text{CO}_2\text{MePEG}-350)_2)_3]^{2+}/+$ electron self-exchange are slowed, the melt viscosity are increased and ionic cond. decreased, and thermal activation barriers for all are enhanced by increasing $[\text{LiClO}_4]$. Most of the effects are assocd. with the Li^+ cation/polyether coordination well-known in polymer **electrolytes**, in which chain crosslinking and a decrease in chain segmental mobility occurs. The $[\text{Co}(\text{bpy}(\text{CO}_2\text{MePEG}-350)_2)_3]^{2+}/+$ electron self-exchange reaction is shown to be adiabatic (kinetic prefactor ca. 10^{13} s^{-1}), and modest changes in its rate with $[\text{LiClO}_4]$ are caused by changes in the electron transfer barrier energy. The results are used to draw a hierarchy of dynamics in the metal complex melt in which, for $[\text{LiClO}_4] = 1.3 \text{ M}$, the av. diffusive jump rate is ca. 3 s^{-1} , the av. electron hopping rate is ca. $2 \times 10^4 \text{ s}^{-1}$, and the rate of short-range motions of the hard metal complex core within its soft polyether shell (producing adjacent core-core contacts) is ca. $\geq 10^5 \text{ s}^{-1}$.
- IT 184112-36-5D, complexes with cobalt perchlorate
 (**electrolyte** effects on transport and electron transfer dynamics in a polyether-tailed cobalt bipyridine molten salt)
- RN 184112-36-5 HCA
- CN [2,2'-Bipyridine]-4,4'-dicarboxylic acid, bis[2-[2-(2-methoxymethylethoxy)methylethoxy]methylethyl] ester (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



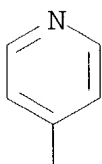
- CC 36-5 (Physical Properties of Synthetic High Polymers)
Section cross-reference(s): 37, 76, 78
- ST polyether cobalt bipyridine complex transport; ionic cond polyether cobalt bipyridine complex; electron transfer polyether cobalt bipyridine complex; **electrolyte** effect polyether cobalt complex transport
- IT Polyoxyalkylenes, properties
(complexes, with cobalt perchlorate; **electrolyte** effects on transport and electron transfer dynamics in a polyether-tailed cobalt bipyridine molten salt)
- IT **Electrolytes**
Electron transfer
Exchange reaction kinetics
Ionic conductivity
Potential barrier
Viscosity
(**electrolyte** effects on transport and electron transfer dynamics in a polyether-tailed cobalt bipyridine molten salt)
- IT Diffusion
(self-; **electrolyte** effects on transport and electron transfer dynamics in a polyether-tailed cobalt bipyridine molten salt)
- IT 13455-31-7D, Cobalt perchlorate, complexes with polyether-bipyridine compd. **184112-36-5D**, complexes with cobalt perchlorate
(**electrolyte** effects on transport and electron transfer dynamics in a polyether-tailed cobalt bipyridine molten salt)
- IT 7791-03-9, **Lithium** perchlorate
(**electrolyte**; **electrolyte** effects on transport and electron transfer dynamics in a polyether-tailed cobalt bipyridine molten salt)
- L70 ANSWER 9 OF 13 HCA COPYRIGHT 2004 ACS on STN
126:79625 New sensing principles for ion detection. Cammann, K.; Ahlers, B.; Henn, D.; Dumschat, C.; Shul'ga, A. A. (Institut fuer Chemo- und Biosensorik e.V., Mendelstrasse 7, Munster, Germany). Sensors and Actuators, B: Chemical, B35(1-3), 26-31 (English) **1996**. CODEN: SABCEB. ISSN: 0925-4005. Publisher: Elsevier.
- AB Public and private bodies responsible for public hygiene and health and all sectors of industry, require accurate, reproducible, stable

and low cost ion sensors. The currently used sensing technologies (potentiometric ion selective electrodes and voltammetric assay techniques on a mercury electrode) do not satisfy the existing need for real-time monitoring of water quality and industrial effluents on a large scale. Also unsatisfied remains the need for real-time assays of blood **electrolytes** at the point of care. These challenges explain the further search for new scientific and tech. solns. in the field of ion sensors. Recently we have developed two novel techniques for ion detection in aq. solns.: (i) ion-selective conductometric microsensors; (ii) ion-selective voltammetric electrodes.

IT 70268-36-9, ETH 1907
(sensing principles for ion detection in wastewater)

RN 70268-36-9 HCA

CN Pyridine, 4-nonadecyl- (9CI) (CA INDEX NAME)



(CH₂)₁₈-Me

CC 61-3 (Water)

Section cross-reference(s): 60, 79

IT 7439-93-2, **Lithium**, analysis 7440-09-7, Potassium, analysis 7440-70-2, Calcium, analysis 14797-55-8, Nitrate, analysis 14798-03-9, Ammonium, analysis
(sensing principles for ion detection in wastewater)

IT 1754-47-8, DOPP 6833-84-7, Nonactin 70268-36-9, ETH 1907
(sensing principles for ion detection in wastewater)

L70 ANSWER 10 OF 13 HCA COPYRIGHT 2004 ACS on STN

126:24075 Electrochemical properties and synthesis of poly(ether)tailed cobalt(II)bipyridine complex. Kim, Il Kwang; Jun, Il Chul; Murray, Royce W. (Dept. of Chemistry, Wonkwang Univ., Iksan City, 570-749, S. Korea). Analytical Science & Technology, 9(3), 292-301 (English) 1996. CODEN: ASCTET. ISSN: 1225-0163. Publisher: Korean Society of Analytical Sciences.

AB The synthesis of poly(ether) tailed bipyridine complex as redox reaction probes has advanced attempts to interpret very slow diffusion and heterogeneous electron transfer. Diffusion coeffs. as low as 1.5x10⁻⁵ cm²/s have been obsd. for the oxidn. of neat Co(bipyridine(polytripropylene glycol monomethyl ether)₂)₃(ClO₄)₂ (i.e., Co(bpy(ppgm)₂)₃(ClO₄)₂) with LiClO₄ **electrolyte**. Heterogeneous electron transfer rate consts. of materials were found to vary with diffusion coeff. The decrease in k as the diffusion

IT	184112-36-5P	(electrochem. properties and synthesis of poly(ether)tailed cobalt(II)bipyridine complex)
RN	184112-36-5	HCA
CN	[2,2'-Bipyridine]-4,4'-dicarboxylic acid, bis[2-[2-(2-methoxymethylethoxy)methylethoxy]methylethyl] ester (9CI) (CA INDEX NAME)	

COCCOCCOC(=O)c1ccc2c(c1)c3ccccc3n2C(=O)OCCOCCOC(=O)c4ccc5c(c4)c6ccccc6n5

PAGE 1-B

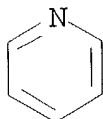
CC 72-2 (Electrochemistry)
Section cross-reference(s): 65, 67, 73, 78

IT Diffusion
(for oxidn. of neat Co(bipyridine(polytripropylene glycol monomethyl ether)₂)₃(ClO₄)₂ with LiClO₄ **electrolyte.**)

IT **184112-36-5P**
(electrochem. properties and synthesis of poly(ether)tailed cobalt(II)bipyridine complex)

IT 7791-03-9, **Lithium** perchlorate
(for oxidn. of neat Co(bipyridine(polytripropylene glycol monomethyl ether)₂)₃(ClO₄)₂ with LiClO₄ **electrolyte.**)

- L70 ANSWER 11 OF 13 HCA COPYRIGHT 2004 ACS on STN
116:161176 Electrochemical synthesis and simultaneous purification process. Toomey, Joseph E., Jr. (Reilly Industries, Inc., USA). PCT Int. Appl. WO 9119020 A1 **19911212**, 28 pp. DESIGNATED STATES: W: JP; RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LU, NL, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1991-US3623 19910523. PRIORITY: US 1990-535335 19900608.
- AB In an electrochem. synthesis including a step of **electrolyzing** a working **electrolyte** into which ions of a 1st charge are selectively exchanged from a counter **electrolyte**, the improvement comprises the step of purifying the **electrolyzed** working **electrolyte** by including it in the counter **electrolyte** of a subsequent synthesis so as to cause the ions to be selectively exchanged into the working **electrolyte** of the subsequent synthesis. Electrochem. oxidn. and redn. synthesis are described.
- IT **1333-41-1P**, Picoline
(synthesis of, by electrochem. redn., with purifn. of **electrolyzed** working **electrolyte**)
- RN 1333-41-1 HCA
CN Pyridine, methyl- (9CI) (CA INDEX NAME)



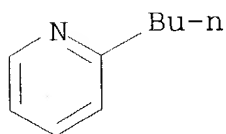
D1-Me

- IC ICM C25B003-00
ICS C25B001-24; C25B015-00
- CC 72-4 (Electrochemistry)
Section cross-reference(s): 21, 78
- IT Oxidation, electrochemical
Reduction, electrochemical
(synthesis by, with purifn. of **electrolyzed** working **electrolyte**)
- IT Synthesis
(electrochem., with purifn. of **electrolyzed** working **electrolyte**)
- IT 91-57-6, 2-Methylnaphthalene 108-89-4, γ -Picoline
108-95-2, Phenol, reactions 108-99-6, β -Picoline 110-00-9,
Furan 600-24-8, 2-Nitrobutane 931-17-9, 1,2-Cyclohexanediol
1317-36-8, Lead monoxide, reactions 1345-13-7, Cerous oxide
7647-15-6, Sodium bromide, reactions

- (electrochem. oxidn. of, with purifn. of **electrolyzed** working **electrolyte**)
- IT 70-70-2, p-Hydroxypropiofenone 99-08-1, m-Nitrotoluene
100-48-1, Pyridine-4-carbonitrile 110-86-1, Pyridine, reactions
123-38-6, Propionaldehyde, reactions 350-03-8, 3-Acetylpyridine
1310-73-2, Sodium hydroxide, reactions 1453-82-3,
Pyridine-4-carboxamide 7447-41-8, **Lithium** chloride,
reactions 19398-53-9, 2,4-Dibromopentane
(electrochem. redn. of, with purifn. of **electrolyzed** working **electrolyte**)
- IT 55-22-1P, 4-Pyridinecarboxylic acid, reactions 58-27-5P,
2-Methylnaphthoquinone 59-67-6P, Niacin, preparation 124-04-9P,
Adipic acid, preparation 332-77-4P, 2,5-Dimethoxy-2,5-dihydrofuran
546-67-8P, Lead tetraacetate 935-50-2P 7726-95-6P, Bromine,
preparation 102871-79-4P 107355-42-0P, Ceric methane sulfonate
(synthesis of, by electrochem. oxidn., with purifn. of **electrolyzed** working **electrolyte**)
- IT 71-23-8P, 1-Propanol, preparation 108-44-1P, m-Toluidine,
preparation 586-95-8P, 4-Pyridylcarbinol 922-17-8P,
3,4-Hexanediol **1333-41-1P**, Picoline 2511-95-7P,
1,2-Dimethylcyclopropane 3731-53-1P, 4-Pyridinemethanamine
4989-59-7P 7439-93-2P, **Lithium**, preparation
7507-01-9P, 3,4-Bis(p-hydroxyphenyl)-3,4-hexanediol 11146-94-4P
(synthesis of, by electrochem. redn., with purifn. of **electrolyzed** working **electrolyte**)
- L70 ANSWER 12 OF 13 HCA COPYRIGHT 2004 ACS on STN
116:135528 Performance-oriented packaging standards; changes to
classification, hazard communication, packaging and handling
requirements based on UN standards and agency initiative. (United
States Dept. of Transportation, Washington, DC, 20590-0001, USA).
Federal Register, 55(246), 52402-729 (English) 21 Dec 1990. CODEN:
FEREAC. ISSN: 0097-6326.
- L70 ANSWER 13 OF 13 HCA COPYRIGHT 2004 ACS on STN
24:53164 Original Reference No. 24:5752a-d Alkali-organic compounds.
VII. Alkali metal alkyls and pyridine (preliminary communication).
Ziegler, K.; Zeiser, H. Ber., 63B, 1847-51 (Unavailable)
1930.
- GI For diagram(s), see printed CA Issue.
AB cf. C. A. 24, 3777. It had been found, in an attempt to dissolve
the deep red PhMe₂CK in C₅H₅N to study its **electrolytic**
behavior, that, unlike the alkali metal compds. of Ph₃C, it is at
once decolorized by C₅H₅N, the reaction being so rapid that the 2
substances can be titrated against each other; the C₅H₅N decolorizes
1 equiv. of the alkali compd. All attempts to carry out reactions
with the primary product led to the formation of oils or resins.
Simple aliphatic and aromatic **Li** compds. were therefore

substituted for the complex PhMe_2CK . When 1-2 N solns. of these Li compds. are added to $\text{C}_5\text{H}_5\text{N}$, heat is evolved until 1 mol. of the Li compd. has been added; if the soln. is heated to $70-100^\circ$ it becomes turbid and deposits a powdery ppt. of LiH which, if the heating has continued long enough, evolves with H_2O 1 mol. $\text{C}_5\text{H}_5\text{N}$, while the soln. contains a 2-alkylpyridine. The primary addn. products, $\text{CH:CH.CH:CH.N-Li.CHR}$, are quite stable in the cold and in some cases can be isolated in cryst. form; with H_2O they form dihydropyridines. The new reaction permits of very smooth direct alkylation of $\text{C}_5\text{H}_5\text{N}$ and related compds. (quinoline, etc.). In this way were prepd. α -butylpyridine, m. $191-3^\circ$, and α -phenylpyridine (60% yield), b. $265-7^\circ$.

IT 5058-19-5, Pyridine, 2-butyl-
 (prepn. of)
 RN 5058-19-5 HCA
 CN Pyridine, 2-butyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



CC 10 (Organic Chemistry)
 IT 1008-89-5, Pyridine, 2-phenyl- 5058-19-5, Pyridine,
 2-butyl-
 (prepn. of)

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 L72 1 S 1333-41-1

FILE 'HCA' ENTERED AT 15:45:36 ON 09 MAR 2004
 L73 600 S L72
 L74 24 S L71 NOT L73

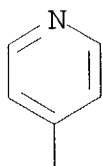
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L74 ANSWER 1 OF 24 HCA COPYRIGHT 2004 ACS on STN
 134:136965 Interactions and reactions of monolayers and
 Langmuir-Blodgett multilayers with compounds in the bulk phase.
 Gabrielli, G.; Caminati, G.; Puggelli, M. (Department of Chemistry,
 University of Florence, Florence, 50121, Italy). Advances in

Colloid and Interface Science, 87(2,3), 75-111 (English)
 2000. CODEN: ACISB9. ISSN: 0001-8686. Publisher: Elsevier
 Science B.V..

AB Studies performed on the interactions and reactions of compds. in the bidimensional state, essentially in monolayers and Langmuir-Blodgett multilayers, with substances in the aq. subphase are reported. More precisely, the following is illustrated: (i) interactions between acid amphiphiles and prevalently bivalent ions placed in the aq. support and between compds. capable of functioning like ion carriers in monolayers and ions in the subphase, in order to build mimetic membranes capable of selective ion transport; and the complexation of amphiphiles in monolayer with ions in the bulk liq. phase, in order to build chem. sensors to ions; (ii) the reactions of photoinduced electron transfer between a partner in mono- or multimol. films and a partner in the subphase, which may det. the fundamental parameters and the differences with the same reactions in the bulk phase; and (iii) the reactions of enzymic hydrolysis between the monolayer of a glyceride, which constitutes the reaction support, and the enzyme in the liq. bulk phase, which constitutes the subphase. The mechanism of the reactions and its inhibition are clarified. Possible future developments connected with the areas studied are examd.

IT 70268-36-9
 (interactions and reactions of lipid monolayers and Langmuir
 Blodgett multilayers with ions and **electrolytes**)
 RN 70268-36-9 HCA
 CN Pyridine, 4-nonadecyl- (9CI) (CA INDEX NAME)

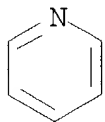


(CH₂)₁₈-Me

CC 66-1 (Surface Chemistry and Colloids)
 Section cross-reference(s): 6
 IT Langmuir monolayers
 Langmuir-Blodgett films
 Langmuir-Blodgett multilayers
 Membranes, nonbiological
 Surface pressure-area isotherms
 (interactions and reactions of lipid monolayers and Langmuir
 Blodgett multilayers with ions and **electrolytes**)
 IT 57-11-4, Stearic acid, properties 112-61-8, Methyl stearate
 628-97-7, Ethyl palmitate 70268-36-9 139504-41-9,
 Dioctadecyldithiocarbamate

(interactions and reactions of lipid monolayers and Langmuir Blodgett multilayers with ions and **electrolytes**)

- L74 ANSWER 2 OF 24 HCA COPYRIGHT 2004 ACS on STN
134:77929 **Electrolyte** slightly acid for glossy zinc plating.
Roman, Liana; Andoniant, Gheorghe; Barbulescu, Emilia; Barbulescu, Nicolae; Mihalcea, Aristita (ICTCM Institutul de Cercetare si Proiectare Tehnologica pentru Constructia de Masini S.A., Bucuresti, Rom.). Rom. RO 114160 B1 **19990129**, 3 pp. (Romanian).
CODEN: RUXXA3. APPLICATION: RO 1997-9702041 19971103.
- AB The invention concerns slightly acid **electrolyte** compn. for glossy zinc plating. The **electrolyte** contg. 85-95 g/l zinc chloride, 150-170 g/l potassium chloride, 25-35 g/l boric acid and org. additive permitting to obtain adherent, uniform and glossy zinc coating on steel articles. The org. additive contg. fatty alc. with C12-14, ethylene oxide or nonylphenol ethoxylate, benzalacetone, sodium benzoate, ethanol, N-allylchloride or dihydroxypropylpyridine.
- IT **65307-84-8D**, Propylpyridine, dihydroxypropyl deriv. of non-identified position of hydroxy groups
(org. additive in **electrolyte** for glossy zinc electroplating contg.)
- RN 65307-84-8 HCA
CN Pyridine, propyl- (9CI) (CA INDEX NAME)



D1-Pr-n

- IC ICM C25D003-22
CC 72-8 (Electrochemistry)
Section cross-reference(s): 56
- ST **electrolyte** slightly acid glossy zinc electroplating org additive
- IT Fatty acids, uses
(C12-14; org. additive in **electrolyte** for glossy zinc electroplating contg.)
- IT Brightening
(agents; **electrolyte** slightly acid for glossy zinc electroplating contg.)
- IT Electrodeposition
(**electrolyte** slightly acid for glossy zinc

- electroplating)
- IT **Electrolytes**
(for glossy zinc electroplating)
- IT Current density
(for glossy zinc electroplating in slightly acid
electrolyte contg. org. additives)
- IT 7440-66-6, Zinc, processes
(**electrolyte** slightly acid for glossy zinc
electroplating)
- IT 7447-40-7, Potassium chloride, uses 10043-35-3, Boric acid, uses
(**electrolyte** slightly acid for glossy zinc
electroplating contg.)
- IT 7646-85-7, Zinc chloride, reactions
(**electrolyte** slightly acid for glossy zinc
electroplating contg.)
- IT 64-17-5, Ethanol, uses 75-21-8, Ethylene oxide, uses 122-57-6,
Benzalacetone 532-32-1, Sodium benzoate 9016-45-9, Nonylphenol
ethoxylate **65307-84-8D**, Propylpyridine, dihydroxypropyl
deriv. of non-identified position of hydroxy groups
(org. additive in **electrolyte** for glossy zinc
electroplating contg.)

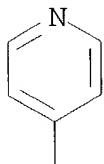
L74 ANSWER 3 OF 24 HCA COPYRIGHT 2004 ACS on STN

134:63143 Electrochemical and Neutron Reflectivity Studies of
Spontaneously Formed Amphiphilic Surfactant Bilayers at the
Gold-Solution Interface. Zamlynny, V.; Burgess, I.; Szymanski, G.;
Lipkowski, J.; Majewski, J.; Smith, G.; Satija, S.; Ivkov, R.
(Department of Chemistry and Biochemistry, University of Guelph,
Guelph, ON, N1G 2W1, Can.). Langmuir, 16(25), 9861-9870 (English)
2000. CODEN: LANGD5. ISSN: 0743-7463. Publisher: American
Chemical Society.

AB We have employed electrochem. and neutron reflectivity measurements
to study the transfer of 4-pentadecyl-pyridine (C15-4Py), an insol.
amphiphilic surfactant, from the gas-soln. (G-S) interface to the
metal-soln. (M-S) interface of a Au(111) electrode. Neutron
reflectivity expts. have demonstrated that C15-4Py forms a bilayer
at the Au(111) electrode surface. Electrochem. expts. demonstrated
that this bilayer is formed spontaneously when the electrode surface
is brought in contact with the film-covered G-S interface. The
surfactant mols. can move from the G-S to the M-S interface across
the triple-phase boundary formed where the metal, soln., and gas
phases are in contact. Time-dependence expts. have shown that the
spreading process is irreversible. Having formed a bilayer or
monolayer at the M-S interface, the C15-4Py surfactant mols. do not
move back to a film-free G-S interface. Three models were used to
analyze the kinetics of spreading. Our results are best explained
assuming that the spreading is a first-order surface reaction
controlled by the activation barrier that the surfactant mols. have

to overcome when crossing the triple-phase line.

- IT **98771-51-8**, 4-Pentadecyl-pyridine
(electrochem. and neutron reflectivity studies of spontaneously
formed amphiphilic surfactant bilayers at gold-soln. interface)
- RN 98771-51-8 HCA
- CN Pyridine, 4-pentadecyl- (9CI) (CA INDEX NAME)



(CH₂)₁₄-Me

- CC 72-2 (Electrochemistry)
Section cross-reference(s): 56, 66
- IT Bilayer membranes
Electrode-**electrolyte** interface
Microbalances
(electrochem. and neutron reflectivity studies of spontaneously
formed amphiphilic surfactant bilayers at gold-soln. interface)
- IT **98771-51-8**, 4-Pentadecyl-pyridine
(electrochem. and neutron reflectivity studies of spontaneously
formed amphiphilic surfactant bilayers at gold-soln. interface)

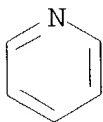
L74 ANSWER 4 OF 24 HCA COPYRIGHT 2004 ACS on STN

131:274126 Nanocrystalline Mesoporous Strontium Titanate as
Photoelectrode Material for Photosensitized Solar Devices:
Increasing Photovoltage through Flatband Potential Engineering.
Burnside, Shelly; Moser, Jacques-E.; Brooks, Keith; Graetzel,
Michael; Cahen, David (Laboratory for Photonics and Interfaces,
Ecole Polytechnique Federale de Lausanne, Lausanne, 1015, Switz.).
Journal of Physical Chemistry B, 103(43), 9328-9332 (English)
1999. CODEN: JPCBFK. ISSN: 1089-5647. Publisher: American
Chemical Society.

AB Nanocryst. SrTiO₃ is synthesized by hydrothermal treatment of
nanocryst. titanium dioxide in the presence of strontium hydroxide.
Working photoelectrochem. solar cells are produced using these
nanometer-sized semiconductor particles as photoelectrode materials.
At AM 1.5, measured open circuit voltages were roughly 100 mV higher
than in solar cells produced using nanocryst. titanium dioxide
(anatase), in agreement with a simple relation between semiconductor
conduction band edge and open circuit voltage for these cells.
Photocurrents measured in the SrTiO₃ cells were roughly 1/3 those
measured with TiO₂ (anatase)-based cells. On the basis of flash
laser photolysis and absorptance studies, we suggest that low dye
loading and possibly suboptimal dye-oxide interactions can be the

cause for the relatively low photocurrents in the SrTiO₃ system.

IT 31388-09-7, Butylpyridine
(**electrolyte** contg.; nanocryst. mesoporous strontium
titanate as photoelectrode material for photosensitized solar
devices)
RN 31388-09-7 HCA
CN Pyridine, butyl- (7CI, 9CI) (CA INDEX NAME)



D1-Bu-n

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 76

IT 31388-09-7, Butylpyridine 86173-31-1
(**electrolyte** contg.; nanocryst. mesoporous strontium
titanate as photoelectrode material for photosensitized solar
devices)

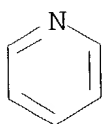
L74 ANSWER 5 OF 24 HCA COPYRIGHT 2004 ACS on STN

131:188820 The concentration of volatile organic compounds inside and
outside the homes of the residents of six European cities.
Phillips, K.; McKenna, A. M.; Howard, D. A.; Bentley, M. C.; Cook,
J. N. (Covance Laboratories Ltd., Harrogate, UK). Advances in
Occupational Medicine & Rehabilitation, 3(3, Volatile Organic
Compounds in the Environment: Risk Assessment and Neurotoxicity),
33-46 (English) 1997. CODEN: AOMRFC. ISSN: 1123-8364.
Publisher: PI-ME Press.

AB Screening for up to 33 volatile org. compds. (VOC) inside and
outside the homes of residents in Turin, Paris, Bremen, Lisbon,
Basel, and Prague occurred in 1995. Residents were selected to be
geodemog. representative of housewives in each city. VOC were
sampled over a 24-h period in >1 location inside each property in
addn. to 1 location outside. The sampling unit comprised a
briefcase contg. a **battery**-operated pump drawing air
through 3 thermal desorption tubes connected in a T configuration.
The tubes contained resins suitable for VOC collection; the arms of
the T-piece typically contained Tenax TA 40/60 mesh. Tubes were
analyzed using automated thermal desorption, compds. of interest
were sepd. using capillary gas chromatog. and identified using mass
spectrometry equipment shown to be a reliable and flexible for fixed
site VOC monitoring. Quantification of identified VOC was performed

using software specifically designed for multi-component analyses in accordance with USEPA std. methods. Concns. of most components were consistent with the findings of other studies, e.g., toluene, 0-250 µg/m³ and benzene, 0-30 µg/m³. Overall, benzene concns. were similar inside and outside the homes, whereas toluene concns. were higher inside vs. outside. Results indicated there were no discernible differences apparent between smoking and non-smoking homes with regard to VOC concns.; however, there were discernible differences in concns. of certain VOC if median levels were compared across the cities. Indoor and outdoor benzene concns. were highest in Turin, Italy; Basel, Switzerland, had the lowest outdoor benzene concn. overall. The prevalence of automobile use in each city might explain the differing benzene concns. obsd., irresp. of whether they were measured indoors or outdoors.

IT 28631-77-8, Ethylpyridine
 (automobile use and tobacco smoking effect on volatile org.
 compd. distribution inside and outside residential homes in six
 European cities)
 RN 28631-77-8 HCA
 CN Pyridine, ethyl- (7CI, 9CI) (CA INDEX NAME)

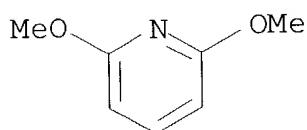


D1-Et

CC 59-2 (Air Pollution and Industrial Hygiene)
 Section cross-reference(s): 51
 IT 71-43-2, Benzene, occurrence 78-79-5, Isoprene, occurrence
 79-01-6, Trichloroethene, occurrence 80-56-8, α-Pinene
 95-47-6, o-Xylene, occurrence 98-82-8, Isopropylbenzene
 100-41-4, Ethylbenzene, occurrence 100-42-5, Styrene, occurrence
 103-65-1, n-Propylbenzene 104-51-8, Butylbenzene 106-42-3,
 p-Xylene, occurrence 106-46-7, 1,4-Dichlorobenzene 106-99-0,
 1,3-Butadiene, occurrence 107-06-2, 1,2-Dichloroethane, occurrence
 108-38-3, m-Xylene, occurrence 108-67-8, 1,3,5-Trimethylbenzene,
 occurrence 108-88-3, Toluene, occurrence 108-89-4, 4-Picoline
 108-99-6, 3-Picoline 109-06-8, 2-Picoline 110-54-3, Hexane,
 occurrence 110-86-1, Pyridine, occurrence 111-65-9, n-Octane,
 occurrence 111-84-2, n-Nonane 112-40-3, Dodecane 124-18-5,
 Decane 127-18-4, Tetrachloroethylene, occurrence 138-86-3,
 Limonene 142-82-5, Heptane, occurrence 526-73-8,
 1,2,3-Trimethylbenzene 536-78-7, 3-Ethylpyridine 629-50-5,

n-Tridecane 1120-21-4, n-Undecane 28631-77-8,
Ethylpyridine
(automobile use and tobacco smoking effect on volatile org.
compd. distribution inside and outside residential homes in six
European cities)

- L74 ANSWER 6 OF 24 HCA COPYRIGHT 2004 ACS on STN
128:276309 **Electrolytic** partial fluorination of organic
compounds. Part 26. 1 Anodic monofluorination of ethyl
isonicotinate. Konno, Akinori; Shimojo, Moriyasu; Fuchigami, Toshio
(4259 Nagatsuta, Department of Electronic Chemistry, Tokyo Institute
of Technology, Yokohama, 226, Japan). Journal of Fluorine
Chemistry, 87(2), 137-140 (English) 1998. CODEN: JFLCAR.
ISSN: 0022-1139. Publisher: Elsevier Science S.A..
AB Anodic fluorinations of Et isonicotinate and related compds. have
been attempted. Desired fluorinated product, Et
2-fluoroisonicotinate, was obtained in reasonable yield by direct
anodic monofluorination of Et isonicotinate. The yield of Et
2-fluoroisonicotinate and the conversion of the electrochem.
reaction could be improved by applying relatively lower anodic
potential and by increasing the concn. of supporting
electrolyte Et3N·3HF.
IT 6231-18-1, 2,6-Dimethoxypyridine
(anodic fluorination of)
RN 6231-18-1 HCA
CN Pyridine, 2,6-dimethoxy- (7CI, 8CI, 9CI) (CA INDEX NAME)



- CC 72-4 (Electrochemistry)
Section cross-reference(s): 27
ST **electrolytic** partial fluorination org compd; anodic
monofluorination ethyl isonicotinate
IT Fluorination
(**electrolytic**; anodic monofluorination of Et
isonicotinate)
IT 7440-06-4, Platinum, uses
(Pt electrodes for **electrolytic** partial fluorination of
Et isonicotinate)
IT 100-48-1, Isonicotinonitrile 6231-18-1,
2,6-Dimethoxypyridine 14548-46-0, 4-Benzoylpyridine
(anodic fluorination of)
IT 7782-42-5, Graphite, uses
(graphite anodes for **electrolytic** partial fluorination)

of Et isonicotinate)

L74 ANSWER 7 OF 24 HCA COPYRIGHT 2004 ACS on STN

121:283252 Optimum additives for turbine oils. Spirkin, V. G.; Gilmudtinov, Sh. K.; Bocharov, A. A. (GANG, Russia). Khimiya i Tekhnologiya Topliv i Masel (6), 24-5 (Russian) 1994. CODEN: KTPMAG. ISSN: 0023-1169.

AB Additives, improving lubricating and anticorrosion properties of turbine oils in the presence of H₂S and **electrolytes**, were investigated. Effect of 0.1 wt.% IFKhANGAZ-1, D-5, or Betol-1 corrosion inhibitor and 0.05 wt.% conventional MSP Mo-contg. antiwear additive on properties of turbine oil Tp-22s was examd. A mixt. of MSP and IFKhANGAZ-1 at a ratio of (1-3):(1-3) and a mixt. of MSP and D-5 at a ratio of 1:(1-3) were recommended.

IT 159065-11-9

(corrosion inhibitor; mixt. of aniline and pyridine and picoline; additive for turbine oils)

RN 159065-11-9 HCA

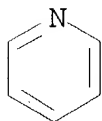
CN Benzenamine, mixt. with methylpyridine and pyridine (9CI) (CA INDEX NAME)

CM 1

CRN 1333-41-1

CMF C6 H7 N

CCI IDS

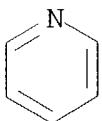


D1-Me

CM 2

CRN 110-86-1

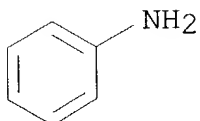
CMF C5 H5 N



CM 3

CRN 62-53-3

CMF C6 H7 N



CC 51-8 (Fossil Fuels, Derivatives, and Related Products)

IT 159065-11-9

(corrosion inhibitor; mixt. of aniline and pyridine and picoline; additive for turbine oils)

L74 ANSWER 8 OF 24 HCA COPYRIGHT 2004 ACS on STN

118:221835 Selective cathodic cleavage of unsymmetrical imidodicarbonates, acylcarbamates and diacylamides. Maia, Hernani L. S.; Monteiro, Luis S.; Degerbeck, Fredrik; Grehn, Leif; Ragnarsson, Ulf (Dep. Quim., Univ. Minho, Braga, 4719, Port.). Journal of the Chemical Society, Perkin Transactions 2: Physical Organic Chemistry (1972-1999) (3), 495-500 (English) 1993. CODEN: JCPKBH. ISSN: 0300-9580.

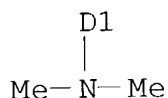
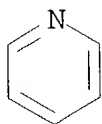
AB A study of the selective cathodic cleavage of 1 of the alkoxy carbonyl or acyl groups from various imidodicarbonates, acylamides, and diacylamides is reported. The compds. investigated include all 15 possible combinations of the following groups in unsym. N,N-diprotected derivs. of benzylamine: p-nitrobenzyloxycarbonyl, trichloroethyloxycarbonyl, toluene-p-sulfonyl, benzoyl, benzyloxycarbonyl, and tert-butyloxycarbonyl which can all be electrochem. cleaved, except the last one. Initially the compds. were examd. by cyclic voltammetry to measure the potentials assocd. with the cleavage of each group, and afterwards they were **electrolyzed** at const. potential in the presence of a proton donor. The following ranges in neg. potential were recorded: 1.03-1.13 V [Z(NO₂)], 1.8-2.14 V (Troc), 1.75-2.41 V (Tos), 1.88-2.52 V (Bz), and 2.83-2.9 V (Z), thus occasionally revealing a drastic effect of the auxiliary group. In the **electrolytic** expts., competitive attack by the base occasionally led to mixts. of monoacylamides. However, all compds. apart from some of the trichloroethyloxycarbonyl derivs. could be selectively cleaved in 89-100% yields when an appropriate proton donor was used. Tentative explanations are given for the behavior of the studied compds., and some conclusions are drawn.

IT 57951-36-7, Dimethylaminopyridine

(catalyst, in prepn. of imidodicarbonates and acylamides and diacylamides)

RN 57951-36-7 HCA

CN Pyridinamine, N,N-dimethyl- (9CI) (CA INDEX NAME)



CC 72-2 (Electrochemistry)

Section cross-reference(s): 22

IT 57951-36-7, Dimethylaminopyridine

(catalyst, in prepn. of imidodicarbonates and acylamides and diacylamides)

IT 67-56-1, Methanol, uses

(proton donor, in **electrolysis** of imidodicarbonates and acylcarbamates and diacylamides)

IT 554-68-7, Triethylamine hydrochloride

(proton donor, in **electrolysis** of imidodicarbonates and acylcarbamates and diacylamides)

L74 ANSWER 9 OF 24 HCA COPYRIGHT 2004 ACS on STN

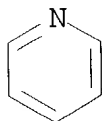
114:234441 Land disposal restrictions for third third schedule wastes. (United States Environmental Protection Agency, Washington, DC, 20460, USA). Federal Register, 56(21), 3864-928 (English) 31 Jan 1991. CODEN: FEREAC. ISSN: 0097-6326.

AB Regulations on prohibition of land disposal of certain hazardous wastes are amended under the Federal Resource Conservation and Recovery Act. These amendments include: treatment stds. for certain solvent wastes, clarification of the term multisource leachate, regulations for small quantity generators, the definition of inorg. solid debris, application of the Toxicity Characteristic Leaching Procedure and the Extn. Procedure in detg. land disposal restrictions, addn. of acid leaching-chem. pptn. and thermal recovery of metals to the list of technologies for waste treatment, tables of regulated hazardous constituent concns. in wastewaters and nonwastewaters, technol.-based stds. by waste code, and effective dates of regulation for the specific wastes.

IT 27987-10-6, Methylethylpyridine*

(hazardous wastes contg., land disposal of, stds. for)

RN 27987-10-6 HCA
 CN Pyridine, ethylmethyl- (9CI) (CA INDEX NAME)



D1-Me

D1-Et

CC 60-5 (Waste Treatment and Disposal)

IT **Batteries**, secondary

(wastes from prodn. of, land disposal and treatment of stds. for)

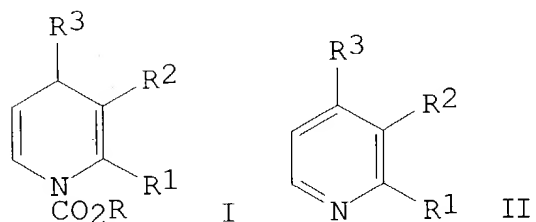
IT 145-73-3, Endothall 148-82-3 151-50-8, Potassium cyanide
 151-56-4, Aziridine, uses and miscellaneous 152-16-9, Octamethyl
 pyrophosphoramidate 156-60-5 189-55-9, Benzo[rs]pentaphene
 191-24-2, Benzo[ghi]perylene 192-65-4, Dibenzo(a,e)pyrene
 193-39-5, Indeno[1,2,3-cd]pyrene 205-99-2, Benzo(b)fluoranthene
 206-44-0, Fluoranthene 207-08-9, Benzo(k)fluoranthene 208-96-8,
 Acenaphthylene 218-01-9, Chrysene 225-51-4, Benz(c)acridine
 297-97-2 298-00-0, Methyl parathion 298-02-2, Phorate
 298-04-4, Disulfoton 298-06-6 302-01-2, Hydrazine, uses and
 miscellaneous 303-34-4, Lasiocarpine 305-03-3 309-00-2, Aldrin
 311-45-5, Diethyl p-nitrophenyl phosphate 319-84-6, α -BHC
 319-85-7, β -BHC 319-86-8, δ -BHC 353-50-4, Carbonyl
 fluoride 357-57-3, Brucine 460-19-5, Cyanogen 465-73-6,
 Isodrin 494-03-1 504-24-5, 4-Aminopyridine 504-60-9,
 1,3-Pentadiene 506-61-6, Potassium silver cyanide 506-64-9,
 Silver cyanide (Ag(CN)) 506-68-3, Cyanogen bromide 506-77-4,
 Cyanogen chloride 509-14-8, Tetranitromethane 510-15-6,
 Chlorobenzilate 534-52-1 534-52-1D, salts 540-73-8,
 1,2-Dimethylhydrazine 541-53-7, 2,4-Dithiobiuret 541-73-1,
 m-Dichlorobenzene 542-62-1, Barium cyanide 542-76-7,
 3-Chloropropionitrile 542-88-1, Bis(chloromethyl) ether
 557-19-7, Nickel cyanide (Ni(CN)₂) 557-21-1, Zinc cyanide
 563-68-8, Thallium (I) acetate 591-08-2, 1-Acetyl-2-thiourea
 592-01-8, Calcium cyanide 594-42-3, Trichloromethanethiol
 598-31-2, Bromoacetone 606-20-2, 2,6-Dinitrotoluene 608-93-5,
 Pentachlorobenzene 615-53-2, N-Nitroso-N-methylurethane
 616-40-0, N,N-Diethylhydrazine 621-64-7 628-86-4, Mercury
 fulminate 630-10-4, Selenourea 630-20-6, 1,1,1,2-
 Tetrachloroethane 636-21-5, o-Toluidine hydrochloride 640-19-7,

Fluoroacetamide 684-93-5, N-Nitroso-N-methylurea 692-42-2,
Diethylarsine 696-28-6, Dichlorophenylarsine 757-58-4, Hexaethyl
tetraphosphate 759-73-9, N-Nitroso-N-ethylurea 765-34-4,
Glycidaldehyde 789-02-6, o,p'-DDT 924-16-3, N-
Nitrosodibutylamine 930-55-2, N-Nitrosopyrrolidine 959-98-8,
Endosulfan I 1024-57-3, Heptachlor epoxide 1031-07-8, Endosulfan
sulfate 1116-54-7, N-Nitrosodiethanolamine 1120-71-4
1303-28-2, Arsenic pentoxide 1314-32-5, Thallic oxide 1314-62-1,
Vanadium pentoxide, uses and miscellaneous 1314-84-7, Zinc
phosphide 1319-77-3, Cresylic acid 1327-53-3, Arsenic trioxide
1330-20-7, Xylene, uses and miscellaneous 1335-32-6, Lead
subacetate 1338-23-4, Methyl ethyl ketone peroxide 1464-53-5,
1,2:3,4-Diepoxybutane 1476-11-5 1888-71-7, Hexachloropropene
2303-16-4, Diallate 2465-27-2, Auramine 2763-96-4 3165-93-3,
4-Chloro-o-toluidine hydrochloride 3288-58-2, O,O-Diethyl
S-methyldithiophosphate 3424-82-6 3689-24-5 4170-30-3,
2-Butenal 4549-40-0 5344-82-1, 1-(o-Chlorophenyl)thiourea
6533-73-9, Thallium (I) carbonate 7421-93-4, Endrin aldehyde
7439-92-1, Lead, biological studies 7439-97-6, Mercury, biological
studies 7440-02-0, Nickel, uses and miscellaneous 7440-22-4,
Silver, uses and miscellaneous 7440-28-0, Thallium, uses and
miscellaneous 7440-36-0, Antimony, uses and miscellaneous
7440-38-2, Arsenic, uses and miscellaneous 7440-39-3, Barium, uses
and miscellaneous 7440-43-9, Cadmium, uses and miscellaneous
7440-47-3, Chromium, uses and miscellaneous 7440-50-8, Copper,
uses and miscellaneous 7440-62-2, Vanadium, uses and miscellaneous
7440-66-6, Zinc, uses and miscellaneous 7446-08-4, Selenium
dioxide 7446-18-6, Thallium (I) sulfate 7664-39-3, Hydrogen
fluoride, uses and miscellaneous 7778-39-4, Arsenic acid
7782-41-4, Fluorine, uses and miscellaneous 7782-49-2, Selenium,
uses and miscellaneous 7783-06-4, Hydrogen sulfide, uses and
miscellaneous 7787-47-5, Beryllium chloride 7791-12-0, Thallium
(I) chloride 7803-51-2, Phosphine 7803-55-6, Ammonium vanadate
8001-35-2, Toxaphene 10061-01-5, cis-1,3-Dichloropropene
10061-02-6, trans-1,3-Dichloropropene 10102-44-0, Nitrogen
dioxide, uses and miscellaneous 10102-45-1, Thallium (I) nitrate
10595-95-6, N-Nitrosomethylethylamine 11096-82-5, Aroclor 1260
11097-69-1, Aroclor 1254 11104-28-2, Aroclor 1221 11141-16-5,
Aroclor 1232 12672-29-6, Aroclor 1248 12674-11-2, Aroclor 1016
12789-03-6, Chlordane 13463-39-3, Nickel carbonyl 13765-19-0,
Calcium chromate 15347-57-6, Lead acetate 16040-38-3, Lead
phosphate 16752-77-5, Methomyl 18496-25-8, Sulfide 18883-66-4,
Streptozotocin 20816-12-0, Osmium tetroxide 20830-81-3,
Daunomycin 20859-73-8, Aluminum phosphide 23950-58-5, Pronamide
25376-45-8, Toluenediamine 26471-62-5, Toluene diisocyanate
26628-22-8, Sodium azide **27987-10-6**, Methylethylpyridine*
30402-14-3, Tetrachlorodibenzofuran 30402-15-4,
Pentachlorodibenzofuran 33213-65-9, Endosulfan II 34465-46-8,

Hexachlorodibenzo-p-dioxin 36088-22-9, Pentachlorodibenzo-p-dioxin 39196-18-4, Thiofanox 39377-49-6, Copper cyanide 39638-32-9, Bis(2-Chloroisopropyl) ether 41903-57-5, Tetrachlorodibenzo-p-dioxin 53469-21-9, Aroclor 1242 55684-94-1, Hexachlorodibenzofuran 56093-45-9, Selenium sulfide 62140-13-0, Phosphorus sulfide 134018-94-3
(hazardous wastes contg., land disposal of, stds. for)

L74 ANSWER 10 OF 24 HCA COPYRIGHT 2004 ACS on STN
114:143084 Pyridine synthesis via anodic oxidation of 1-acyldihydropyridines. Comins, Daniel L.; Killpack, Michael O. (Dep. Chem. Biochem., Utah State Univ., Logan, UT, 84322-0300, USA). Heterocycles, 31(11), 2025-8 (English) 1990. CODEN: HTCYAM. ISSN: 0385-5414. OTHER SOURCES: CASREACT 114:143084.

GI



AB The prepn. of several substituted pyridines via anodic oxidn. of 1-acyldihydropyridines is reported. Thus, electrochem. oxidn. of 1-acyl-1,4-dihydropyridines I (R = Et, Ph; R₁ = H, Me; R₂ = H, Me, Cl; R₃ = Bu, Ph) in MeOH using NaOMe as the **electrolyte** gave 24-89% the pyridines II.

IT 132819-69-3P

(prepn. of)

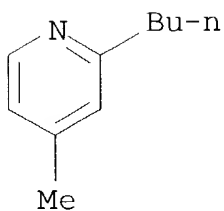
RN 132819-69-3 HCA

CN Pyridine, 2-butyl-4-methyl-, compd. with 2,4,6-trinitrophenol (1:1)
(9CI) (CA INDEX NAME)

CM 1

CRN 6304-31-0

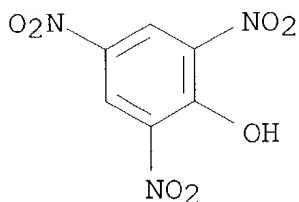
CMF C10 H15 N



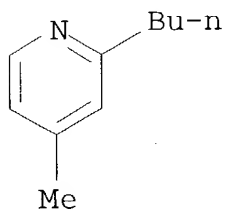
CM 2

CRN 88-89-1

CMF C6 H3 N3 O7



IT **6304-31-0P**, 2-Butyl-4-methylpyridine
 (prepn. of, by electrochem. oxidn. of acyldihydropyridine)
 RN 6304-31-0 HCA
 CN Pyridine, 2-butyl-4-methyl- (9CI) (CA INDEX NAME)



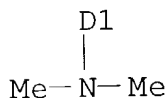
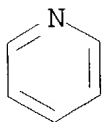
CC 27-16 (Heterocyclic Compounds (One Hetero Atom))
 IT 1689-41-4P 3372-48-3P 15032-22-1P 132819-67-1P 132819-68-2P
132819-69-3P
 (prepn. of)
 IT 939-23-1P, 4-Phenylpyridine 2052-92-8P, 3-Methyl-4-phenylpyridine
 3475-21-6P 5335-75-1P, 4-Butylpyridine **6304-31-0P**,
 2-Butyl-4-methylpyridine 15032-21-0P, 2-Methyl-4-phenylpyridine
 90732-01-7P, 3-Chloro-4-phenylpyridine
 (prepn. of, by electrochem. oxidn. of acyldihydropyridine)

L74 ANSWER 11 OF 24 HCA COPYRIGHT 2004 ACS on STN
 114:70988 Anodic amide oxidations in the presence of electron-rich

phenyl rings: evidence for an intramolecular electron-transfer mechanism. Moeller, Kevin D.; Wang, Po W.; Tarazi, Sharif; Marzabadi, Mohammad R.; Wong, Poh Lee (Dep. Chem., Washington Univ., St. Louis, MO, 63130, USA). Journal of Organic Chemistry, 56(3), 1058-67 (English) 1991. CODEN: JOCEAH. ISSN: 0022-3263. OTHER SOURCES: CASREACT 114:70988.

AB The anodic oxidns. of amides in the presence of mono-, di-, and trialkoxyphenyl rings were examd. Although literature redn. potentials suggest that these oxidns. would lead to either selective arom. ring oxidn. or mixts., the chemoselectivity of the reactions was found to be dependent on the substitution pattern of the Ph ring. For example, the anodic oxidns. of ((3-methoxyphenyl)acetyl)pyrrolidine, ((2-methoxyphenyl)acetyl)pyrrolidine, ((3-methoxy-4-(pivaloyloxy)phenyl)acetyl)pyrrolidine, and ((3,5-dimethoxy-4-(pivaloyloxy)phenyl)acetyl)pyrrolidine all led to selective methoxylation of the pyrrolidine ring. The anodic oxidns. of ((4-methoxyphenyl)acetyl)pyrrolidine and (3,4-dimethoxyphenyl)pyrrolidine led to selective methoxylation of the benzylic carbon. Mechanistic studies indicate that both amide and aryl oxidn. processes compete under the reaction conditions, but that intramol. electron transfer leads to the selective formation of products. Evidence for this mechanism was obtained by examg. the cyclic voltammogram of ((3-methoxyphenyl)acetyl)pyrrolidine, competition studies, and the preparative **electrolysis** of ((4-methoxyphenyl)-2,2-dimethylacetyl)pyrrolidine. The methoxylated amides were cyclized to form tricyclic amides using titanium tetrachloride.

IT 57951-36-7, (Dimethylamino)pyridine
(in synthesis of methoxypivaloyloxyphenylacetylpyrrolidine)
RN 57951-36-7 HCA
CN Pyridinamine, N,N-dimethyl- (9CI) (CA INDEX NAME)



CC 72-2 (Electrochemistry)
Section cross-reference(s): 22, 25, 27
IT 18927-05-4, Methyl(3-methoxyphenyl)acetate 23786-14-3,
Methyl(4-methoxyphenyl)acetate

(**electrolysis** of, in acetonitrile with methanol)
IT 3282-30-2, Pivaloyl chloride **57951-36-7**,
(Dimethylamino)pyridine 81911-99-1
(in synthesis of methoxypivaloyloxypHENylacetylpyrrolidine)

L74 ANSWER 12 OF 24 HCA COPYRIGHT 2004 ACS on STN

99:164382 Effect of inorganic **electrolyte** kind on
alkylpyridinium ions adsorption on the aqueous solution-air
interface. Goralczyk, Danuta (Inst. Chem., Jagiellonian Univ.,
Krakow, 30-060, Pol.). Tenside Detergents, 20(5), 228-31 (English)
1983. CODEN: TSDTAZ. ISSN: 0040-3490.

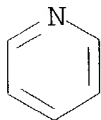
AB Surface properties of $RnPy^+$ ($n = 8, 10, 12$) were studied in the
presence of NaCl, NaBr, and NaI at 25° . The counterions
affect the surface activity of $RnPy^+$ in the order $Cl^- < Br^- < I^-$.
The free energy of adsorption was calcd. by using a 2-dimensional
gas model for the adsorption film. At low surface pressures, the
results can be described by using an integral form of the Freundlich
adsorption isotherm. The Butler equation can be used to describe
the adsorption isotherm if a 2-dimensional soln. model of the
adsorption film is chosen.

IT **87526-84-9 87526-85-0**

(surface properties of, in aq. halide solns.)

RN 87526-84-9 HCA

CN Pyridine, octyl-, conjugate acid (9CI) (CA INDEX NAME)

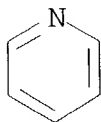


Me- (CH₂)₇-D1

● H⁺

RN 87526-85-0 HCA

CN Pyridine, decyl-, conjugate acid (9CI) (CA INDEX NAME)



Me- (CH₂)₉-D1

● H⁺

CC 66-1 (Surface Chemistry and Colloids)

IT 15416-74-7 87526-84-9 87526-85-0

(surface properties of, in aq. halide solns.)

L74 ANSWER 13 OF 24 HCA COPYRIGHT 2004 ACS on STN

93:229120 Some new solid **electrolytes**: substituted organic ammonium silver iodides. Ferraro, John R.; Labonville Walling, Priscilla; Sherren, Anne T. (Chem. Div., Argonne Natl. Lab., Argonne, IL, 60439, USA). Applied Spectroscopy, 34(5), 570-5 (English) 1980. CODEN: APSPA4. ISSN: 0003-7028.

AB Several new solid **electrolytes** were synthesized from the reaction of substituted org. NH₄ hydroiodides (pyridinium- and quinolinium-type) and varying quantities of AgI. The inductive effects of nucleophilic and electrophilic substitution on the pyridinium or quinolinium ring and the substituent position on the ionic cond. were detd. Pressure and thermal studies were undertaken to det. if new nonambient conductive phases exist.

IT 75617-92-4

(ionic cond. and IR spectra of solid **electrolytes** of)

RN 75617-92-4 HCA

CN Argentate(1-), octaiodohepta-, hydrogen, compd. with N,N-dimethyl-4-pyridinamine (2:1) (9CI) (CA INDEX NAME)

CM 1

CRN 75496-89-8

CMF Ag7 I8 . H

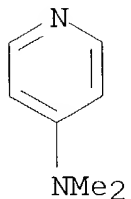
CCI CCS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 2

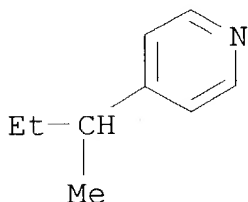
CRN 1122-58-3

CMF C7 H10 N2



- CC 76-2 (Electric Phenomena)
Section cross-reference(s): 73
- ST solid **electrolyte** silver iodide; cond silver iodide **electrolyte**; IR silver iodide **electrolyte**; pyridinium silver iodide **electrolyte**; quinolinium silver iodide **electrolyte**; ammonium hydroiodide org **electrolyte**
- IT Infrared spectra
(of solid **electrolytes** of substituted org. ammonium hydroiodides of pyridinium- and quinolinium-type)
- IT Electric conductivity and conduction
(ionic, of solid **electrolytes** of substituted org. ammonium hydroiodides of pyridinium- and quinolinium-type)
- IT 30732-66-2 73509-92-9 75324-50-4 75324-51-5 75324-52-6
75324-53-7 75324-54-8 75334-12-2 75334-13-3 **75617-92-4**
75617-93-5 75617-94-6 75617-95-7 75617-96-8 75617-97-9
75617-98-0 75617-99-1 75618-00-7 75618-01-8 75618-02-9
75618-03-0 75618-04-1 75618-05-2 75618-07-4
(ionic cond. and IR spectra of solid **electrolytes** of)
- L74 ANSWER 14 OF 24 HCA COPYRIGHT 2004 ACS on STN
88:36959 Stereochemical studies of the **electrolytic** reactions of organic compounds. IV. **Electrolytic** reduction of optically-active 1-pyridylalkanols to the corresponding substituted-alkyl pyridines. Nonaka, Tsutomu; Ota, Tetsuro; Fuchigami, Toshio (Grad. Sch., Tokyo Inst. Technol., Yokohama, Japan). Bulletin of the Chemical Society of Japan, 50(11), 2965-8 (English) 1977. CODEN: BCSJA8. ISSN: 0009-2673.
- AB The mechanism of **electrolytic** redn. of 1-pyridylalkanol to the corresponding substituted alkylpyridine was examd. by **electrolyzing** several optically active RCR1R2OH (R = 2- and 4-pyridyl; R2 = Me, Et; R2 = Et, Ph) in aq. H2SO4 at an Hg cathode. The alkylpyridine from 1-(2-pyridyl)alkanol showed optical rotation, while that from 1-(4-pyridyl)alkanol was almost racemized. The **electrolytic** redn. involves configurational retention and racemization in the cases of 1-(2-pyridyl)- and -(4-pyridyl)alkanols, resp. The mechanism involves addn. of 2 electrons to the pyridine nucleus via a pyridinium N atom adsorbed on the

catalyst surface.
 IT **27876-19-3P**
 (prepn. of)
 RN 27876-19-3 HCA
 CN Pyridine, 4-(1-methylpropyl)- (9CI) (CA INDEX NAME)



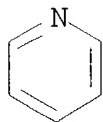
CC 22-5 (Physical Organic Chemistry)
 Section cross-reference(s): 72
 IT Stereochemistry
 (of **electrolytic** redn. of optically active
 pyridylalkanols)
 IT **27876-19-3P** 42362-47-0P 65363-65-7P 65363-66-8P
 65363-67-9P 65363-68-0P 65363-69-1P 65363-70-4P 65363-71-5P
 65363-72-6P 65363-73-7P 65664-85-9P 65664-86-0P 65664-87-1P
 65664-90-6P 65664-91-7P 65664-92-8P 65664-93-9P 65664-94-0P
 65664-95-1P 65701-61-3P 65701-62-4P 65716-20-3P
 (prepn. of)

L74 ANSWER 15 OF 24 HCA COPYRIGHT 2004 ACS on STN

86:91539 Study of the stability of cellulose ion exchange fibers.
 Chebotareva, R. D.; Mel'nik, T. S.; Grebenyuk, V. D.; Nosov, M. P.
 (Inst. Kolloidn. Khim. Khim. Vody, Kiev, USSR). Ukrainskii
 Khimicheskii Zhurnal (Russian Edition), 42(12), 1267-72 (Russian)
1976. CODEN: UKZHAU. ISSN: 0041-6045.

AB Rayon and vinyl compd.-modified rayon change their physicomech.
 properties and orientation indicators on exposure to
electrolyte solns. The nature of the **electrolytes**
 and the contact time of rayon-contg. ion exchangers with the
electrolytes had a less significant effect on properties of
 fibers than the swelling and drying cycles. Storage of fibers in
 0.1N acid and alk. solns. did not change the swelling degree of
 rayon and anion exchanger TsMA 2 (cellulose-methylvinylpyridine
 graft copolymer reaction products with epichlorohydrin)
 [39290-60-3]. A 10 and 5% decrease in swelling of cation exchanger
 (TsMK 4 (cellulose-methacrylic acid graft copolymer) [61811-66-3]
 was obsd. in acid and alk. solns., resp.

IT **25638-00-0D**, polymer with rayon
 (graft, anion exchanger)
 RN 25638-00-0 HCA
 CN Pyridine, ethenylmethyl- (9CI) (CA INDEX NAME)



D1-Me

D1-CH=CH₂

CC 39-3 (Textiles)
IT Anion exchangers
Cation exchangers
(rayon graft copolymers with vinyl compds., stability of, in **electrolyte** solns.)

IT 39290-60-3 61811-64-1
(anion exchangers, stability of, in **electrolyte** solns.)

IT 37218-14-7 61811-66-3
(cation exchangers, stability of, in aq. **electrolyte** solns.)

IT 61811-65-2
(cation exchangers, stability of, in **electrolyte** solns.)

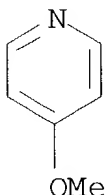
IT **25638-00-0D**, polymer with rayon
(graft, anion exchanger)

L74 ANSWER 16 OF 24 HCA COPYRIGHT 2004 ACS on STN
84:185653 Acidity constants and enthalpies of dissociation of para-substituted pyridinium ions in water-methanol mixtures. Tissier, Claude; Tissier, Madeleine (Lab. Chim. Gen., U.E.R. Sci. Exactes Nat., Aubiere, Fr.). Journal de Chimie Physique et de Physico-Chimie Biologique, 73(2), 149-55 (French) **1976**. CODEN: JCPBAN. ISSN: 0021-7689.

AB Acidity constns. of pyridinium ions and 2 of its 4-substituted derivs. were detd. in water-methanol mixts. using a **galvanic cell** composed of a glass electrode and a satd. calomel electrode. This cell was standardized with 2 aq. buffer solns. The data so obtained in the temp. range 5-35° enable the std. enthalpies and entropies of dissocn. to be calcd. These thermodyn. functions show max. values in a mixt. contg. 0.8 mole fraction of water, corresponding to the max. for water structure.

IT **33613-95-5**
(acidity functions and thermodyn. of dissocn. of, in methanol-water mixts.)

RN 33613-95-5 HCA
CN Pyridine, 4-methoxy-, conjugate monoacid (8CI, 9CI) (CA INDEX NAME)



● H⁺

CC 69-1 (Thermodynamics, Thermochemistry, and Thermal Properties)
IT 16950-21-3 16969-45-2 **33613-95-5** 37449-63-1
37449-65-3 40569-40-2 40617-90-1 59348-10-6 59348-11-7
(acidity functions and thermodyn. of dissocn. of, in
methanol-water mixts.)

L74 ANSWER 17 OF 24 HCA COPYRIGHT 2004 ACS on STN

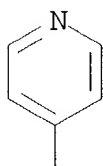
53:89521 Original Reference No. 53:16160c-f 2- and 4-Substituted
pyridines. Goldschmidt, Stefan; Minsinger, Manfred DE 952807
19561122 (Unavailable). APPLICATION: DE .

AB The title products are prepd. by treatment of anhyd. pyridine (I),
which may also be substituted by alkyl, aryl, and aralkyl radicals,
preferably by decompn. of a diacyl peroxides in I at elevated temps.
or by **electrolysis** of an anhyd mixt. (salt) of I and a
carboxylic acid. E.g., 8 g. 95% diacetyl peroxide in 50 g. glacial
AcOH is dropped into 80 g. anhyd. I and 60 g. glacial AcOH, heated
to 100°, the mixt. stirred 4 hrs. further with heating after
gas evolution ceased, basified with NaOH, the layers sepd., the aq.
layer extd. with Et₂O, and the combined org. layers fractionally
dstd. to yield 4.7 g. 2-Me deriv. of I, b. 129°, and 0.5 g.
4-Me deriv. of I, b. 143°, in over-all yield of 86%. The
following substituted I were prepd. similarly (substituents, b.ps.,
and over-all yield given): 2- and 4-Et, 149° and 170°,
86.5%; 2-, 4-, and 2,4-di-Pr, 168°, 188°, -, 85%;
2,5-MeEt and 2,4-MeEt, 165-6°, 177-9°, 40%; undecyl,
-, 22%. The yield decreases to 15% if the radicals are formed by
electrolysis.

IT **1816-00-8**, Pyridine, 4-undecyl-
(prepn. of)

RN 1816-00-8 HCA

CN Pyridine, 4-undecyl- (6CI, 7CI, 9CI) (CA INDEX NAME)



(CH₂)₁₀-Me

NCL 12P; 1-01

CC 10G (Organic Chemistry: Heterocyclic Compounds)

IT 100-71-0, Pyridine, 2-ethyl- 104-90-5, 2-Picoline, 5-ethyl-
 536-75-4, Pyridine, 4-ethyl- 536-88-9, 2-Picoline, 4-ethyl-
 622-39-9, Pyridine, 2-propyl- 1122-81-2, Pyridine, 4-propyl-
1816-00-8, Pyridine, 4-undecyl- 46118-35-8, Pyridine,
 2,4-dipropyl- 80401-50-9, Pyridine, 2-undecyl-
 (prepn. of)

L74 ANSWER 18 OF 24 HCA COPYRIGHT 2004 ACS on STN

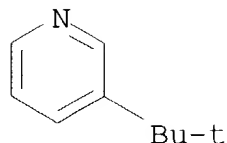
50:23911 Original Reference No. 50:4819b-e A quantitative approach to
 the ortho effects of halogen substituents in aromatic systems.
 McDaniel, Darl H.; Brown, Herbert C. (Purdue Univ., Lafayette, IN).
 Journal of the American Chemical Society, 77, 3756-63 (Unavailable)
1955. CODEN: JACSAT. ISSN: 0002-7863.

AB The ortho effects of alkyl groups are now fairly well understood and
 may be interpreted largely in terms of F-strain interactions and
 steric inhibition of resonance. The highly polar nature of the
 halogen substituents has made the attainment of a similar
 understanding of the ortho effects of these substituents more
 difficult. It is suggested that in their reaction with a proton the
 substituted pyridine bases provide a system which is largely free of
 such ortho effects as F-strain, steric inhibition of resonance, and
 H bonding. Consequently, the substituted pyridine bases provide a
 nearly ideal reference system for the estimation of the purely polar
 contribution of ortho substituents. In this way it has been
 possible to arrive at a quant. estimate of the direction and
 magnitude of the ortho effects of halogen substituents, as well as
 other substituents, in a no. of benzoic acids, phenylboric acids,
 phenols, thiophenols, anilines, and dimethylanilines. This quant.
 estimate of the ortho effects permits an assessment of the relative
 contributions of such phenomena as F-strain, steric inhibition of
 resonance, and H bonding to the total ortho effect of substituents
 in a no. of aromatic systems.

IT **38031-78-6**, Pyridine, 3-tert-butyl- **633309-45-2**,
 Pyridine, 2-tert-butyl-, picrate
 (steric effects in)

RN 38031-78-6 HCA

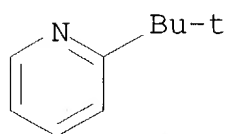
CN Pyridine, 3-(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



RN 633309-45-2 HCA
 CN Pyridine, 2-tert-butyl-, picrate (5CI) (CA INDEX NAME)

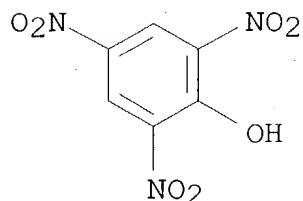
CM 1

CRN 5944-41-2
 CMF C9 H13 N



CM 2

CRN 88-89-1
 CMF C6 H3 N3 O7



CC 10 (Organic Chemistry)
 IT Ionization

(**electrolytic**, of aromatic systems, ortho effects and)
 IT 55-22-1, Isonicotinic acid 59-67-6, Nicotinic acid 74-11-3,
 Benzoic acid, p-chloro- 88-65-3, Benzoic acid, o-bromo- 88-67-5,
 Benzoic acid, o-iodo- 90-00-6, Phenol, o-ethyl- 90-43-7, Phenol,
 o-phenyl- 92-67-1, 4-Biphenylamine 92-69-3, Phenol, p-phenyl-
 95-51-2, Aniline, o-chloro- 95-56-7, Phenol, o-bromo- 95-57-8,
 Phenol, o-chloro- 98-73-7, Benzoic acid, p-tert-butyl- 99-04-7,
 m-Toluic acid 99-93-4, Acetophenone, 4'-hydroxy- 99-94-5,
 p-Toluic acid 99-97-8, p-Toluidine, N,N-dimethyl- 100-71-0,
 Pyridine, 2-ethyl- 106-40-1, Aniline, p-bromo- 106-41-2, Phenol,

p-bromo- 106-44-5, p-Cresol 106-45-6, p-Toluenethiol 106-47-8, Aniline, p-chloro- 106-48-9, Phenol, p-chloro- 106-53-6, Benzenethiol, p-bromo- 106-54-7, Benzenethiol, p-chloro- 108-39-4, m-Cresol 108-40-7, m-Toluenethiol 108-42-9, Aniline, m-chloro- 108-43-0, Phenol, m-chloro- 108-44-1, m-Toluidine 108-89-4, 4-Picoline 108-99-6, 3-Picoline 109-04-6, Pyridine, 2-bromo- 109-09-1, Pyridine, 2-chloro- 110-86-1, Pyridine 118-91-2, Benzoic acid, o-chloro- 121-71-1, Acetophenone, 3'-hydroxy- 121-72-2, m-Toluidine, N,N-dimethyl- 123-07-9, Phenol, p-ethyl- 348-54-9, Aniline, o-fluoro- 350-03-8, Ketone, methyl 3-pyridyl 367-12-4, Phenol, o-fluoro- 371-40-4, Aniline, p-fluoro- 371-41-5, Phenol, p-fluoro- 372-19-0, Aniline, m-fluoro- 372-20-3, Phenol, m-fluoro- 372-47-4, Pyridine, 3-fluoro- 372-48-5, Pyridine, 2-fluoro- 445-29-4, Benzoic acid, o-fluoro- 455-38-9, Benzoic acid, m-fluoro- 456-22-4, Benzoic acid, p-fluoro- 462-08-8, Pyridine, 3-amino- 504-24-5, Pyridine, 4-amino- 504-29-0, Pyridine, 2-amino- 535-80-8, Benzoic acid, m-chloro- 536-66-3, Benzoic acid, p-isopropyl- 536-75-4, Pyridine, 4-ethyl- 536-78-7, Pyridine, 3-ethyl- 585-76-2, Benzoic acid, m-bromo- 586-76-5, Benzoic acid, p-bromo- 591-19-5, Aniline, m-bromo- 591-20-8, Phenol, m-bromo- 612-19-1, Benzoic acid, o-ethyl- 615-36-1, Aniline, o-bromo- 618-51-9, Benzoic acid, m-iodo- 619-64-7, Benzoic acid, p-ethyl- 620-17-7, Phenol, m-ethyl- 626-02-8, Phenol, m-iodo- 626-55-1, Pyridine, 3-bromo- 626-60-8, Pyridine, 3-chloro- 644-98-4, Pyridine, 2-isopropyl- 694-52-0, Pyridine, 4-fluoro- 696-30-0, Pyridine, 4-isopropyl- 698-69-1, Aniline, p-chloro-N,N-dimethyl- 768-35-4, Benzeneboronic acid, m-fluoro- 939-23-1, Pyridine, 4-phenyl- 1008-88-4, Pyridine, 3-phenyl- 1008-89-5, Pyridine, 2-phenyl- 1077-58-3, Benzoic acid, o-tert-butyl- 1120-90-7, Pyridine, 3-iodo- 1679-18-1, Benzeneboronic acid, p-chloro- 1765-93-1, Benzeneboronic acid, p-fluoro- 2037-31-2, Benzenethiol, m-chloro- 2243-47-2, 3-Biphenylamine 3814-19-5, Acetophenone, 3'-mercapto- 3814-20-8, Acetophenone, 4'-mercapto- 3900-89-8, Benzeneboronic acid, o-chloro- 3978-81-2, Pyridine, 4-tert-butyl- 4139-78-0, Cumidine, N,N-dimethyl- 5029-67-4, Pyridine, 2-iodo- 5720-05-8, p-Tolueneboronic acid 6304-18-3, Pyridine, 3-isopropyl- 6320-01-0, Benzenethiol, m-bromo- 6320-02-1, Benzenethiol, o-bromo- 6320-03-2, Benzenethiol, o-chloro- 6848-13-1, Aniline, m-chloro-N,N-dimethyl- 7498-54-6, Benzoic acid, m-tert-butyl- 17933-03-8, m-Tolueneboronic acid 37972-89-7, Benzenethiol, o-iodo- **38031-78-6**, Pyridine, 3-tert-butyl- 52928-01-5, Benzenethiol, p-iodo- 63503-60-6, Benzeneboronic acid, m-chloro- **633309-45-2**, Pyridine, 2-tert-butyl-, picrate (steric effects in)

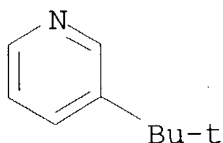
displacement reactions. III. The base strengths of pyridine, 2,6-lutidine, and the monoalkylpyridines. Brown, Herbert C.; Mihm, Xavier R. (Purdue Univ., Lafayette, IN). Journal of the American Chemical Society, 77, 1723-6 (Unavailable) 1955. CODEN: JACSAT. ISSN: 0002-7863.

AB Ultraviolet absorption spectra have been applied as a convenient method for detg. the dissocn. consts. of a no. of alkyl substituted pyridine bases. The pKa values have been detd. in H₂O at 25° for the following substituted pyridines (substituent given): H 5.17; 2-Me 5.97, 2-Et 5.97, 2-Pr 5.97, 2-Me₂CH 5.83, 2-Me₃C 5.76, 3-Me 5.68, 3-Et 5.70, 3-Me₂CH 5.72, 3-Me₃C 5.82, 4-Me 6.02, 4-Et 6.02, 4-Me₂CH 6.02, 4-Me₃C 5.99, 2,6-di-Me 6.75. The introduction of an alkyl group into the 2-, 3-, or 4-position results in an increase in the pKa value of 0.5-0.8 unit. The nature of the alkyl group (Me, Et, Me₂CH, Me₃C) in the 3- or 4-position has little effect on the base strength. In the 2-position the more highly branched alkyl groups bring about a decrease in strength of the base. The increase in base strength from pyridine to 2-picoline (0.80 pKa unit) is the same as the increase from 2-picoline to 2,6-lutidine (0.78 pKa unit). This points to the absence of any important steric effects in the addn. of the proton to the latter base or in the solvation of the ion. The positions of the max. and min. on the absorbancy index curves from 220 to 280 mμ are tabulated for the pyridine bases used. The following bases were fractionated over CaH₂ in a 70-plate column: pyridine, b743 114°, nD₂₀ 1.5092; 2-picoline, b740 127°, nD₂₀ 1.5010; 3-picoline, b747 142°, nD₂₀ 1.5058; 4-picoline, b740 143°, D₂₀ 1.5051.

IT **38031-78-6**, Pyridine, 3-tert-butyl-
(ionization consts. and spectra of)

RN 38031-78-6 HCA

CN Pyridine, 3-(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



CC 10 (Organic Chemistry)

IT Ionization

(electrolytic, of pyridine and its alkyl derivs., spectra and)

IT 100-71-0, Pyridine, 2-ethyl- 536-75-4, Pyridine, 4-ethyl-
536-78-7, Pyridine, 3-ethyl- 644-98-4, Pyridine, 2-isopropyl-
696-30-0, Pyridine, 4-isopropyl- 3978-81-2, Pyridine,
4-tert-butyl- 5944-41-2, Pyridine, 2-tert-butyl- 6304-18-3,
Pyridine, 3-isopropyl- **38031-78-6**, Pyridine, 3-tert-butyl-

(ionization consts. and spectra of)

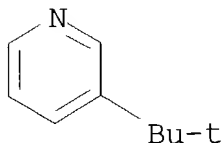
L74 ANSWER 20 OF 24 HCA COPYRIGHT 2004 ACS on STN

50:12342 Original Reference No. 50:2585f-i,2586a-e Steric effects in displacement reactions. II. The rates of reaction of alkyl iodides with the monoalkylpyridines. Steric strain in the activated complex. Brown, Herbert C.; Cahn, Arno (Purdue Univ., Lafayette, IN). Journal of the American Chemical Society, 77, 1715-23 (Unavailable) 1955. CODEN: JACSAT. ISSN: 0002-7863.

AB cf. C.A. 46, 2054e. The rates of reaction of weak pyridine bases with alkyl halides have been detd. by the titrn. of the base with HClO₄ in glacial AcOH. The method has been applied to the study of the rates of the reaction of pyridine and the 2-, 3-, and 4-monoalkylpyridines (alkyl = Me, Et, Me₂CH, Me₂C) with MeI, EtI, and Me₂CHI in PhNO₂ soln. Energies and entropies of activation have been calcd. from the rate data at several temps. The rate consts. of the reaction with MeI in PhNO₂ (d₂₅ 1.1974, n_{D25} 1.5518), k₂ + 10⁵ l. mole⁻¹ sec.⁻¹ (at the temp. given in parentheses), the energy of activation (kcal./mol), and the log A value were for the following substituted pyridines (substituent given): H, 10.0 (10°), 50.5 (30°), 213 (50°), 13.89, 6.72; 3-Me, 21.2 (10°), 104.5 (50°), 422 (50°), 13.59, 6.82; 3-Et, 110.6 (30°), -, -; 3-Me₂CH, 118 (30°), -, -; 3-Me₃C, 138 (30°), -, -; 4-Me, 22.4 (10°), 111 (30°), 448 (50°), 13.62, 6.86; 4-Et, 113.5 (30°), -, -; 4-Me₂CH, 112 (30°), -, -; 4-Me₃C, 22.6 (10°), 111.5 (30°), 457 (50°), 13.68, 6.91; 2-Me, 10.8 (20°), 23.9 (30°), 49.9 (40°), 193 (60°), 13.98, 6.91; 2-Et, 5.06 (20°), 11.4 (30°), 24.2 (40°), 95.7 (60°), 14.22, 6.31; 2-Me₂CH, 3.69 (30°), 17.1 (50°), 64.8 (70°), 14.84, 6.27; 2-Me₃C, 0.0130 (30°), 0.182 (60°), 0.824 (80°), 3.08 (100°), 17.52, 5.75. The same data (given) were detd. for the reactions with EtI: H, 15.1 (50°), 30.9 (60°), 63.2 (70°), 235 (90°), 15.98, 6.98; 3-Me, 14.1 (40°), 62.7 (60°), 239 (80°), 15.53, 6.98; 3-Et, 64.1 (60°), -, -; 3-Me₂CH, 63.3 (60°), -, -; 4-Me, 14.7 (40°), 67.7 (60°), 257 (80°), 15.70, 7.12; 4-Et, 67.9 (60°), -, -; 4-Me₂CH, 68.1 (60°), -, -; 4-Me₃C, 67.6 (60°), -, -; 2-Me, 3.69 (50°), 7.85 (60°), 16.75 (70°), 62.1 (90°), 16.46, 6.70; 2-Et, 3.77 (60°), 16.1 (80°), 55.4 (100°), 16.64, 6.49; 2-Me₂CH, 1.15 (60°), 5.08 (80°), 18.7 (100°), 60.2 (120°), 17.07, 6.26. The same data (given) were detd. for the reactions with Me₂CHI: H, 2.21 (60°), 10.0 (80°), 38.4 (100°), 17.67, 6.93; 3-Me, 4.02 (60°), 17.6 (80°), 66.7 (100°), 17.39, 7.01; 3-Et, 17.5

(80°), -, -; 3-Me₂CH, 16.5 (80°), -, -; 3-Me₃C, 15.5 (80°), -, -; 3-Me₃C, 15.5 (80°), -, -; 4-Me, 4.41 (60°), 19.4 (80°), 18.8 (80°) (over the 1st 10% reaction), 72.0 (100°), 17.29, 6.98; 4-Et, 19.0 (80°), -, -; 4-Me₂CH, 18.7 (80°), -, -; 4-Me₃C, 18.9 (80°), -, -; 2-Me, 0.157 (60°), 0.813 (80°), 3.51 (100°), 19.22, 6.80. The reaction rates decrease sharply from MeI to EtI and further from EtI to Me₂CHI. The energies of activation show a corresponding increase, while the entropies of activation remain sensibly const. The introduction of a Me group into the 3- or 4-position of the pyridine base results in a small increase in the rate with no significant addnl. change as the alkyl group is varied from Me to Et, or further to Me₂CH and Me₃C. The introduction of these alkyl groups in the 2-position results in a decrease in rate which becomes very pronounced in the base of 2-tert-butylpyridine. Maintaining const. the steric requirements of the base, the rate of reaction decreases and the energy of activation increases with increasing steric requirements of the alkyl halide. Similarly, maintaining const. the steric requirements of the alkyl halide results in a rate which decreases and an energy of activation which increases with the increasing steric requirements of the pyridine base. Simultaneous increases in the steric requirements of both the alkyl halide and the pyridine base cause cumulative changes in the reaction rates and activation energies. The effects of increasing steric requirements of the alkyl halide and the pyridine base on the stability of the activated complex are very similar to the effects of increasing steric requirements of the acid and base on the stability of mol. addn. compds. It is proposed that steric hindrance effects in these displacement reactions are primarily the result of steric strains in the activated complex and should be related to steric strains in mol. addn. compds. of similar steric requirements.

IT **38031-78-6**, Pyridine, 3-tert-butyl- **633309-45-2**,
Pyridine, 2-tert-butyl-, picrate
(reaction with alkyl iodides, kinetics of)
RN 38031-78-6 HCA
CN Pyridine, 3-(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)

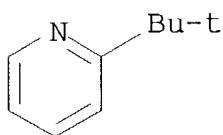


RN 633309-45-2 HCA
CN Pyridine, 2-tert-butyl-, picrate (5CI) (CA INDEX NAME)

CM 1

CRN 5944-41-2

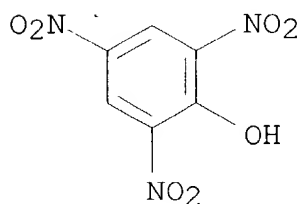
CMF C9 H13 N



CM 2

CRN 88-89-1

CMF C6 H3 N3 O7



CC 10 (Organic Chemistry)

IT Ionization

(**electrolytic**, of pyridine and its alkyl derivs., spectra and)

IT 100-71-0, Pyridine, 2-ethyl- 536-75-4, Pyridine, 4-ethyl-
536-78-7, Pyridine, 3-ethyl- 644-98-4, Pyridine, 2-isopropyl-
696-30-0, Pyridine, 4-isopropyl- 3978-81-2, Pyridine,
4-tert-butyl- 6304-18-3, Pyridine, 3-isopropyl- **38031-78-6**
, Pyridine, 3-tert-butyl- **633309-45-2**, Pyridine,
2-tert-butyl-, picrate

(reaction with alkyl iodides, kinetics of)

L74 ANSWER 21 OF 24 HCA COPYRIGHT 2004 ACS on STN

50:1526 Original Reference No. 50:333f-i,334a-f **Electrolysis**
of organic acids and the decomposition of diacyl peroxides, III. The
electrolysis of free fatty acid and the decomposition of
diacyl peroxides in pyridine. Goldschmidt, Stefan; Minsinger,
Manfred (Tech. Hochschule, Munich, Germany). Chemische Berichte,
87, 956-63 (Unavailable) **1954**. CODEN: CHBEAM. ISSN:
0009-2940. OTHER SOURCES: CASREACT 50:1526.

AB cf. C.A. 46, 10970h. AcOH (II), EtCO₂H (III), and PrCO₂H (IV) were
electrolyzed in pyridine (I) or α -methylpyridine. The
electrolysis of fatty acids in I and the decompn. of acyl

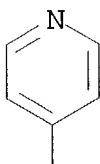
peroxides in I produced similar results. The app. with a diaphragm (previously described C.A. 25, 5152) was first used. The quantity and kind of gas produced at the anode was the same as before (Hare, et al., C.A. 47, 1229g). The H evolved at the cathode did not come from I, so the app. without a diaphragm was used in preps., thus increasing the rate of current flow and decreasing the time required. The mechanism of the reaction is discussed. The **electrolysis** of an acid gave 2- and 4-alkylpyridine and small amts. of dialkylpyridine. The diacyl peroxides in fatty acid soln. were added dropwise to I or a mixt. of I and the acid at 100 or $115 \pm 2^\circ$. Solid dilauroyl peroxide (V) was introduced directly into cold I and the mixt. brought to the desired temp. and held there. Gases were analyzed in the Orsat app. After the **electrolysis**, the **electrolyte** was made alk. with NaOH, the mixt. extd. 5-6 times with ether, the ext. dried with K_2CO_3 , the ether dist. off, and the basic mixt. fractionated; picrates, $HgCl_2$ double salts, and chloroplatinates were used to identify the products. **Electrolysis** of 330 g. II in 270 g. I (48 v., 186 hrs., 133 amp.-hrs., c.d. 0.05 amp./sq. cm.) gave the following fractions (b.p./725 mm. given): 0.5 g., $114-23^\circ$; 0.2 g., $123.5-5.5^\circ$; 5.8 g., $125.5-6.0^\circ$ {identified as 2-methylpyridine [picrate, m. $163.5-4.0^\circ$ (from alc.); $HgCl_2.HCl$ double salt, m. 154° (from H_2O)]} 1.0 g., $128-36.5^\circ$; 0.6 g., $136.5-43^\circ$; 2.0 g., $144.5-45^\circ$ {identified as 4-methylpyridine [picrate, m. $164.5-65^\circ$ (from alc.); $HgCl_2.HCl$ double salt, m. $128-9^\circ$ (from H_2O)]}, and 2 g. viscous resin. I (1.38 moles) in 7.85 moles III (220 v., 70 hrs., 136.5 amp.-hrs., c.d. 0.08 amp./sq. cm.) gave the following fractions (b.p./715 mm. given): 0.4 g., $121-43.5^\circ$; 1.0 g., $143.5-5.0^\circ$; 0.8 g., $145-6^\circ$; 10.5 g., 146° {identified as 2-ethylpyridine (VIII) [chloroplatinate, m. 166.5° (from H_2O); $HgCl_2.HCl$ double salt, m. 110° (from alc.)]}; 1 g., $147-54^\circ$; 0.6 g., $155-8^\circ$; 0.3 g., $158-60^\circ$; 0.3 g., $160-2^\circ$; 1.1 g., $162-3.5^\circ$; 8.0 g., $163.5-64^\circ$ {identified as 4-ethylpyridine (IX) [picrate, m. $167-8^\circ$ (from alc.); chloroplatinate, m. 215° (from H_2O); $HgCl_2.HCl$ double salt, m. $147-8^\circ$ (from H_2O)]}; 0.2 g., $165-83^\circ$; 1.3 g., $184-7^\circ$ {identified as 2,4-diethylpyridine (X) [chloroplatinate, m. 187.5° (from H_2O); picrate, m. 112° (from H_2O)] which on oxidation with aq. $KMnO_4$ gave 2,4-pyridinedicarboxylic acid}; and 1.8 g. viscous resin. I (3.4 moles) and 4.45 moles III (220 v., 91 hrs., 110 amp.-hrs., c.d. 0.05 amp./sq. cm.) gave 22 g. VIII and 8 g. IX. I (3.8 moles) and 2.7 moles III (220 v., 191 hrs., 71 amp.-hrs., 0.015 amp./sq. cm.) gave 7 g. VIII and 5.5 g. IX. I (3.4 moles) and 3.75 moles IV (220 v., 480 hrs., 69 amp.-hrs., 0.0058 amp./sq. cm.) gave the following fractions (b.p./715 mm. given): 2.0 g., $128-63^\circ$; 1.2 g., $163.5-65^\circ$; 6 g., $165-6^\circ$

{identified as 2-propylpyridine (XA) [picrate, m. 64° (from alc.); HgCl₂.HCl double salt, 81° (from H₂O)]}; 0.5 g., 166.5-80°; 1.3 g., 180-3° [identified as 4-propylpyridine (XB) [picrate, m. 131° (from alc.)]]; 0.6 g., 184-98°; and 1.5 g. viscous resin. To 80 g. I and 60 g. II at 100° was added in 30 min. 8 g. 95% Ac₂O₂ in 50 g. II and the mixt. held 4 hrs. at 100° to give the following fractions (b.p./715 mm. given): 0.3 g., 115-24°; 4.6 g. VI, 125-6°; 0.2 g., 128-41°; 0.6 g. VII, 142-3°; and 1.3 g. viscous resin. To 1.26 moles I at 100° was added in 45 min. 27.3 g. 99% (EtCO)₂O₂ (XI) in 27.3 g. III and the mixt. held 5 hrs. at 100° to give the following fractions (b.p./715 mm. given): 1.1 g., 115-46°; 11.8 g. VIII, 147-8°; 0.3 g., 149-61°; 5.5 g. IX, 162-4°; 0.3 g., 166-81°; 0.4 g. X, 184-7°; and 0.5 g. viscous resin. To 1.26 moles I at 115° was added in 25 min. 20 g. 87% (PrCO)₂O₂ in 15 g. IV and the mixt. held 4 hrs. at 115° to give the following fractions (b.p./718 mm. given): 1.2 g., 115-75.5°; 7.2 g. XA, 166-8.5°; 0.4 g., 169-80°; 3.0 g. XB, 181-3°; and 2 g. viscous resin. To 1.26 moles I was added 10 g. 90% V and the mixt. held 8 hrs. at 115° to give the following fractions: 1.5 g. 2-n-undecylpyridine, b1 130-2°, nD₂₂ 1.4823; 0.1 g., b1 133°; 0.5 g. 4-n-undecylpyridine b1 142-5°, nD₂₂ 1.4794. To 1.8 moles VI at 110° was added in 3 hrs. 67.5 g. 99% XI in 67.5 g. III and the mixt. held 4 hrs. at 110° to give the following fractions (b.p./712 mm. given): 3.5 g., 129-57°; 1.1 g., 158-61°; 10.1 g. 2-methyl-6-ethylpyridine, 161-3.5°; 1.9 g., 165-75°; 8.2 g. 2-methyl-4-ethylpyridine (XIII), 176-8°; and 5.2 g. viscous resin. Oxidation of XII and XIII with aq. KMnO₄ gave 2,6- and 2,4-pyridinedicarboxylic acids.

IT 1816-00-8, Pyridine, 4-undecyl-
(prepn. of)

RN 1816-00-8 HCA

CN Pyridine, 4-undecyl- (6CI, 7CI, 9CI) (CA INDEX NAME)



(CH₂)₁₀-Me

CC 10 (Organic Chemistry)

IT Fatty acids

(electrolysis of)

- IT 110-86-1, Pyridine
(acyl peroxide decompn. and fatty acid **electrolysis** in)
- IT 64-19-7, Acetic acid 79-09-4, Propionic acid 107-92-6, Butyric acid
(**electrolysis** of)
- IT 536-88-9, 2-Picoline, 4-ethyl- 1122-69-6, 2-Picoline, 6-ethyl-
1122-81-2, Pyridine, 4-propyl- **1816-00-8**, Pyridine,
4-undecyl- 21011-76-7, Pyridine, 4-propyl-, picrate 80401-50-9,
Pyridine, 2-undecyl-
(prepn. of)

L74 ANSWER 22 OF 24 HCA COPYRIGHT 2004 ACS on STN

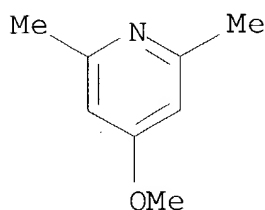
45:55702 Original Reference No. 45:9542g-i,9543a-e Syntheses of
methylpyridine derivatives. Ochiai, Eiji; Katoh, Tetsuzo (Univ.
Tokyo). Yakugaku Zasshi, 71, 156-60 (Unavailable) **1951**.
CODEN: YKKZAJ. ISSN: 0031-6903.

AB 2,6-Lutidine (I) (2 g.) and 2 g. EtBr heated 5 hrs. on a water bath
in a sealed tube, washed with EtOH, and pptd. with Me₂CO give 2 g.
I.EtBr (II), m. 80°. Heating 4.2 g. II, 4.5 g. BzH, 10 ml.
abs. alc., and 3 drops piperidine 12 hrs. in a sealed tube on a
water bath, removing the BzH, pptg. with Me₂CO, and recrystg. from
CHCl₃ gives 1.5 g. 2,6-distyrylpyridine-EtBr (III). Treating the
mother liquor with 4 g. BzH, 3 drops piperidine, and 10 ml. abs.
alc. as above gives 2.5 g. III, m. 241°. Treating 2 g. II, 4
g. o-MeOC₆H₄CHO, 3 drops piperidine, and 10 ml. abs. alc. as
above 5 hrs., washing with Me₂CO, and recrystg. from MeOH gives 2.5
g. 2,6-bis(p-methoxystyryl)pyridine-EtBr (IV), m. 251°. On
catalytic reduction in 20 ml. MeOH with 0.1 g. MgO and 0.1 g. PtO₂
for 5 hrs., 2 g. III absorbs 570 ml. H₂; removing the MeOH, taking up
in ether the oily layer which seps. on addn. of NaOH, drying the
ether, and adding 20 ml. 10% HCl gives 3 layers; the middle oily
layer is washed with water, dissolved in CHCl₃, the CHCl₃ removed,
and the residue made alk. with NH₄OH and extd. with ether to give
1-ethyl-2,6-diphenethylpiperidine (V); perchlorate, C₂₃H₃₂O₄NC1, m.
176°; the free base, b_{6.5} 245-50°.

Electrolytic reduction of III with Pd-C gives V. Catalytic
reduction of 3 g. IV with 0.12 g. MgO and 0.2 g. PtO₂ in 30 ml. MeOH
as before, the mixt. made alk. with K₂CO₃, extd. with CHCl₃, and the
ext. distd. give 1-ethyl-2,6-bis(p-methoxyphenethyl)piperidine (VI),
b₇ 290-300°; VI.HCl, m. 180-2°. Refluxing 12 g.
2,6-diphenethylpyridine and 10 g. p-MeC₆H₄SO₃H 3 hrs., adding C₆H₆,
and recrystg. from Me₂CO gives 13.5 g. 1-ethyl-2,6-
diphenethylpyridinium p-toluenesulfonate (VII), white needles, m.
124-5°. Catalytic reduction of 3.5 g. VII with 0.3 g. PtO₂
in 30 ml. MeOH and 0.15 g. MgO gives 0.9 g. V, m. 178-80°;
perchlorate, m. 172-4°. 4-Nitro-2,6-lutidine 1-oxide (1 g.)
in 30 ml. MeOH with MeONa (1.5 g. Na), heated 1 hr. on a water bath,
extd. with C₆H₆, and recrystd. from C₆H₆-H₂O gives 0.8 g. 4-MeO

analog, m. 69-70°. 4-Methoxy-2,6-lutidine 1-oxide (2.2 g.) catalytically reduced in 30 ml. Ac₂O with Pt-Pd-C, made alk., extd. with ether, and distd. gives 1.3 g. 4-methoxy-2,6-lutidine (VIII), b. 195-200°; methiodide, columns, decomp. 202°. Heating 2.5 g. VIII and 5 g. EtBr 6 hrs. in a sealed tube on water bath and washing the crystals with Me₂CO gives 4.5 g. product which is dissolved in 30 ml. abs. alc., heated 12 hrs. in a sealed tube with 4.4 g. BzH and 2 drops piperidine on a water bath, and pptd. with Me₂CO-Et₂O to give 0.5 g. 4-methoxy-2,6-distyrylpyridine-EtBr (IX), m. 230°. Treating the residue as above gives 0.2 g. IX, crystals with 0.5 mol. H₂O from Me₂CO, m. 249°. Heating 4.6 g. IX, 10 g. o-MeOC₆H₄CHO, 30 ml. abs. alc., and 3 drops piperidine 6 hrs. in a sealed tube on water bath, removing the alc., washing with ether, and recrystg. from Me₂CO gives 2 g. 4-methoxy-2,6-bis(p-methoxystyryl)pyridine-EtBr.H₂O, m. 212-13°. 4-Nitro-2,6-lutidine 1-oxide (X) (0.5 g.), 1 g. BzH, and 0.25 g. ZnCl₂ heated 12 hrs. at 130° in a sealed tube, distd. with 10 ml. 10% HCl, and the residue extd. with CHCl₃, then CCl₄, and pptd. with MeOH gives 50 mg. crystals, m. 225°, and a larger resinified part; the 4-MeO analog of X, BzH, and ZnCl₂ in a similar way give 0.1 g. crystals, decomp. 210° (242° when recrystd. from Me₂CO). Catalytic reduction of X in Ac₂O with Pd-C gives 4-amino-2,6-lutidine columns, m. 180-6° (191-2° from Me₂CO).

IT 20815-02-5, 2,6-Lutidine, 4-methoxy-
(prepn. of)
RN 20815-02-5 HCA
CN Pyridine, 4-methoxy-2,6-dimethyl- (9CI) (CA INDEX NAME)



CC 10 (Organic Chemistry)
IT 3512-80-9, 2,6-Lutidine, 4-amino- 6890-59-1, 2,6-Lutidine,
4-methoxy-, 1-oxide 20815-02-5, 2,6-Lutidine, 4-methoxy-
(prepn. of)

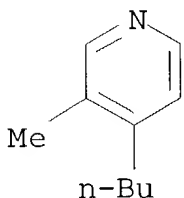
L74 ANSWER 23 OF 24 HCA COPYRIGHT 2004 ACS on STN
43:29486 Original Reference No. 43:5399d-h Anticoagulant substances. I. Derivatives of bis(4-hydroxy-3-coumarinyl)acetic acid ("Pelantan"). Fucik, K.; Prochazka, Z.; Cechova, V. Bulletin de la Societe Chimique de France 99-103 (Unavailable) 1949. CODEN: BSCFAS. ISSN: 0037-8968.

AB Bis(4-hydroxy-3-coumarinyl)acetic acid (I), m. 215° (yield, 85%), has been prepd. by condensation of 4-hydroxycoumarin with a soln. of HCOCO₂H (2.5%) prepd. **electrolytically**. Pyridine salt, m. 183-5° (from alc.). Esters of I may be prepd. by direct esterification with alcs. and concd. H₂SO₄ or dry HCl as catalyst. All esters form monosalts (at the 4- or 4'-position), with NH₄Et₂, N (CH₂CH₂OH)₃, etc., and give epoxides (4,4'-anhydrides) and Me ethers. Esters of the epoxy acid (II) and their m.ps.: Me 345°, Et 290-3°, Pr 274°, iso-Pr 300°, Bu 264°, iso-Bu 256-7°, 2-hydroxyethyl 279-82°, hydroxypropyl 282°. Esters of I: Me 203-5°, Et 151° and 173°, Pr 143-4°, iso-Pr 203-4°, Bu 154.5°, iso-Bu 169°, hexyl 121-2°, heptyl 125°, octyl 108°, benzyl 186°, 2-hydroxyethyl 122-7°, hydroxypropyl 183°. Esters of I di-Me ether: Me 160-1°, Et 146°. Diethylamine salts of I esters: Me 100-3°, Et 85-6°, Pr 160-2°, Bu 155°, iso-Bu 175°. Dicoumarin diethylamine salt m. 223-7°. Triethanolamine salts: I Et ester 86°, I Pr ester 143°, dicoumarin 191°. All m.ps. are uncor. Synthetic I Et ester has 2 forms: amorphous, m. 151° (from Me₂CO), and cryst., m. 173°. The 2 forms are chemically identical; no evidence for isomerism has yet been found. The esters have hypothermic properties, the Et ester being most active. The ester m. 173° when recrystd. from Me₂CO or MeOH gives the form m. 151°; the latter recrystd. from a higher-boiling solvent gives the 173° form. The crude Et ester contains about 2% of a substance m. 289°, insol. in Me₂CO, which proved to be the Et ester of II formed by the dehydrating action of concd. H₂SO₄ during esterification. In methylating the 2 forms of the Et ester of I with CH₃I under similar conditions, identical products, m. 146°, are obtained. Dissolving the 2 forms (1 part to 10 of C₅H₅N) and adding Ac₂O (15 parts) gives after 20 hrs. identical products, m. 290-3°, identified as the epoxide of the ester

IT 78903-71-6, 3-Picoline, 4-butyl-
(prepn. of)

RN 78903-71-6 HCA

CN Pyridine, 4-butyl-3-methyl- (9CI) (CA INDEX NAME)



CC 10 (Organic Chemistry)

IT 3478-72-6, 3-Picoline, 4-propyl- 20815-29-6, 3-Picoline, 4-ethyl-
78903-71-6, 3-Picoline, 4-butyl-
(prepn. of)

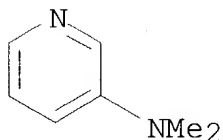
L74 ANSWER 24 OF 24 HCA COPYRIGHT 2004 ACS on STN

29:25694 Original Reference No. 29:3339e-i,3340a-c 3-Aminopyridine and
its derivatives. Binz, A.; v. Schickh, O. Ber., 68B, 315-24
(Unavailable) 1935.

AB 3-Aminopyridine (I) has hitherto been only difficultly available,
but in the course of work on the prepn. of certain pyridinoarsines
it was found that reduction (with Zn dust-H₂SO₄ or
electrolytic) of 6-chloropyridine-3-arsonic acid gives, not
the expected 6-chloropyridine-3-arsonic acid but the Cl-free
pyridine-3-arsonic acid and 3,5'-arsenopyridine. This led to the
hope that, in spite of the statements in the literature to the
contrary, 3-nitro-6-chloropyridine (II), which is commercially
available, might be reduced to I. Such proved to be the case; the
reduction was effected with Zn dust and mineral acids,
electrolytically, and catalytically with H in alc. Pd as
catalyst gave a mixt. of I, 3-amino-6-chloropyridine (III) and
2,6'-dichloro-5,3'-azoxypyridine. (IIIa.) Ni gave 62% I. The best
results, however, were obtained with Pd(OH)₂ on CaCO₃ (Busch and
Stove, C. A. 10, 2727); at the end of the reaction the liberated HCl
was neutralized with NaOH and I was isolated in 93% yield from the
alc. soln. I is also obtained catalytically in good yield from III
or 3-amino-6-bromopyridine. If, in the catalytic reduction of II,
the NaOH is added at the beginning instead of the end of the
operation, 3-amino-6-alkoxypyrimidines are formed instead of I, but
III yields I exclusively. The 3-MeO compd. (IV) was obtained in
this way with special ease in MeOH, the 6-EtO compd. (V) in somewhat
smaller yield. With increase in length of the alkyl chain, the
reaction slows up: PrONa and H in the cold give 2,6'-dipropoxy-5,3'-
azoxypyridine (VI) as the sole definite product, and only at
60-70° is 3-amino-6-propoxypyridine (VII) obtained. BuOK
reacts with 3-nitro-6-bromopyridine only on heating, giving
3-amino-6-butoxypyridine (VIII). I b12 131-2°, m.
64°. 3-Nitro-6-bromopyridine (Rath, Diss. Nicolescu (1928)),
from the 6-HO compd. and PBr₅ at 130-5°, yellowish white, m.
138°, b10 145-7° (yield, 60%,); slowly treated with Fe
powder moistened with water and a few drops AcOH it gives 83% of the
3-amino compd., b12 177-8°, m. 77°. IIIa, m.
188°, insol. in water and dil. acids, is obtained in 10%
yield, along with 23.5% I and 21% III, from II with Pd sponge and H
in alc. IV (90% yield), b14 135° (Rath, C. A. 25, 953,
obtained a product m. 135° by reduction of
2-methoxy-5-nitropyridine). V (67% yield), m. 70°, b11
123-4° (Chichibabin and Builinkin, C. A. 18, 1494, describe

it as very unstable). VI (37% yield), m. 97-8°. VII (70% yield), b18 145-7°. VIII (72% yield), b16 156°. 2-Methoxy-3-aminopyridine, b19 116-18°, m. 69°, was obtained in 75% yield from 2-chloro-3-nitropyridine in NaOH-MeOH with Pd(OH)2-CaCO3 and H. Catalytic reduction of o-and p-ClC6H4NO2 under the same conditions gave 83% PhNH2 and 6-chloro-8-nitroquinoline was reduced practically quantitatively to 8-aminoquinoline. 3-Anhydroformaldehydeaminopyridine, C5H4NN:CH2, m. 180°, is obtained almost quantitatively from I and 40% HCHO. 3-Dimethylaminopyridine (45% from I in N H2SO4 and 10% HCHO slowly treated at 40° with Zn dust), b12 108-10°; di-HCl salt, hygroscopic, m. 143°.

IT **18437-57-5**, Pyridine, 3-dimethylamino-
 (prepn. of)
 RN 18437-57-5 HCA
 CN 3-Pyridinamine, N,N-dimethyl- (9CI) (CA INDEX NAME)



CC 10 (Organic Chemistry)
 IT 539-23-1, Pyridine, 5-amino-2-butoxy- 4487-59-6, Pyridine,
 2-bromo-5-nitro- 5332-24-1, Quinoline, 3-bromo- 5350-93-6,
 Pyridine, 5-amino-2-chloro- 6628-77-9, Pyridine,
 5-amino-2-methoxy- 13534-97-9, Pyridine, 5-amino-2-bromo-
18437-57-5, Pyridine, 3-dimethylamino- 20265-38-7,
 Pyridine, 3-amino-2-methoxy- 52025-34-0, Pyridine,
 5-amino-2-ethoxy-
 (prepn. of)